BRITISH MEDICAL JOURNAL

LONDON SATURDAY JANUARY 3 1942

AN ANALYSIS OF VASOMOTOR PHENOMENA (FAINTS) OCCURRING IN BLOOD DONORS*

BY

HELEN BROWN, M.D., M.R.C.P.

AND

PATRICK McCORMACK, M.B., B.Ch.

The removal of two-thirds of a pint of blood for the Transfusion Service has little effect on the majority of blood donors. A small group—about 5%—show certain vasomotor phenomena, which are commonly called "faints," although loss of consciousness is uncommon. The object of the present investigation was to analyse more precisely the characteristic features of these vasomotor attacks. Records were obtained of 48 donors who fainted. Initial observations were often made on donors before bleeding and not followed up when fainting did not occur. Factors which may influence the incidence of these faints, such as age, sex, time since last meal, type of work, atmosphere and temperature of the room, are being studied in a larger series and will be reported upon later.

A regular routine is adopted for bleeding donors. Donors from factories and institutions are usually fetched by car from their place of work in parties of three or four. On arrival at the clinic they are given their cards, and every effort is made to set their minds at rest if they show any signs of nervousness. As a rule they are bled as soon as they arrive, but at rush periods there is often an unavoidable queue of them, usually good-humoured and cheerful. Having removed their coats, donors are taken by a nurse to the room for bleeding. Here they lie on a couch with their head and shoulders raised to an angle of about 40 degrees; in cold weather they are covered with a blanket. The arm is supported on a pillow, and the skin of the front of the forearm is cleaned by a nurse. A sphygmomanometer cuff is put on the upper arm and a pressure of 80 mm. Hg applied: for routine bleeding the cuff is kept at this pressure, which has been found to be the optimum to obtain a satisfactory flow in most donors. It is occasionally found, however, that the blood flows better if the pressure is lowered to 40 mm. Hg. Approximately 0.2 c.cm. of local anaesthetic—novutox—is injected at the site of venepuncture: this produces a sharp sting, due to its antiseptic content. The venepuncture needle is then inserted. Each step is explained to the donor. The bleeding takes from three to ten minutes, depending on whether the needle is well in place and on the size of the vein. The nurses talk to the donors throughout the proceedings. The donors remain on the couch for two to three minutes after the removal of the needle while the arm is being bandaged. They then get up and walk to the recovery room, where they lie flat for ten to fifteen minutes: they then sit up in a chair, have a cup of tea and a biscuit, and leave shortly afterwards. It has been found that donors prefer to move away from the slightly medical surroundings of the bleeding-couch, even though they have to walk to another room for the rest period. Most donors show no after-effects, and are able to return at once to their work.

In addition to recording symptoms in donors about to faint, signs such as colour changes, sweating, convulsions, vomiting, and incontinence, and blood pressure and pulse rate before and at intervals after bleeding were observed. Since the majority of donors are factory workers, anxious to return to work, we are not able to keep them lying down for a long period before bleeding in order to obtain a baseline for pulse and blood-pressure levels in the recumbent position. It should be noted that blood pressure and pulse readings taken before the attack are with the donor's head and shoulders propped up, those during it with the donor lying flat, and some of the later ones with the donor sitting.

Treatment.—When donors faint the head of the bleeding-couch is immediately lowered and the nurse does her best to assure them that nothing serious has occurred. They remain on the couch until well enough to walk to the recovery room. Adrenaline has been given in some cases, and is thought to have hastened recovery. Controlled observations on this point are now being made. In some cases smelling-salts are used; the effect of these on pulse and blood pressure is unknown.

Type of Donor who Faints

A history of previous fainting, either associated with or independent of bleeding, was present in over half the donors who fainted. In just under half there was evidence of nervousness, either objectively or by the donor's own confession. A type which is likely to faint is that exemplified by Case 47—a weedy, furtive, and bumptious little man aged 26, who showed considerable apprehension. He was described at the time as an obvious social misfit, and gave a history of previous faints. On the other hand most unlikely people may faint—e.g., No. 37, who works in the blood depot, is in excellent health, and is not nervous. She has fainted on two successive occasions, both times after the full amount of blood had been removed. Also Case 11, a woman doctor who normally has a low blood pressure—80/50—and a pulse rate of 56. Burly and phlegmatic policemen faint surprisingly often; the man who insists on reading a newspaper and smoking a cigarette to soothe or hide his nervousness is also a likely victim. The incidence of faints is increased if those waiting to be bled or being bled observe a donor faint. Even allowing for these factors, it is usually not possible to predict which donors will faint.

* A report to the Medical Research Council from the North-West London Blood Supply Depot.

About equal numbers faint after the full amount has been taken and during the actual bleeding. However, since it is sometimes reported that donors have fainted after their return to work, the incidence of fainting is probably higher after than during venesection.

Signs

Flushing.—In 5 cases a preliminary flush was seen on the face—e.g., in Case 7; it was not looked for elsewhere. In some cases this flush was especially watched for and definitely did not occur. It should be noted that many donors flushed when the local anaesthetic was given. This, apparently a reaction to the pain, happened immediately afterwards, and lasted about half a minute, whereas flushing preceding fainting came on later.

Pallor.—Pallor of the face was an almost constant finding, occurring in at least 41. In the more severe cases it was seen also in the hands. It was usually one of the earliest features of the attacks, although often preceded by subjective symptoms such as a feeling of warmth. In only one case (No. 42) is it certain that no pallor occurred throughout the attack, while in three others (Cases 4, 5, and 10) its onset was delayed. In Case 5 the patient did not become pale until four minutes after complaining of faintness and dizziness, while Case 10 felt faint after being bled, but did not become pale until she collapsed after walking to the recovery room. Apart from being fairly mild there was no other distinguishing feature in these three cases.

Sweating.—Sweating was mostly associated with pallor, and varied from slight clamminess to drenching perspiration apparently over the whole body, since the clothing was soaked.

Slowing of the Venous Stream.—Slowing of the stream was observed in only 6 of the cases in which the attack occurred during bleeding. The attack was well developed before slowing took place.

Convulsions.—Convulsions associated with loss of consciousness were present in 7 instances. It is not common for loss of consciousness to occur without convulsions, though it has been observed—not in this series—when donors walking to the recovery room collapse to the ground; convulsions preceding loss of consciousness have not been seen. The convulsions were much the same in type. The usual premonitory signs—faintness, pallor, etc.—were followed by loss of consciousness, a tonic spasm throughout the body with deviation of the head and eyes to one side, and fixed dilated pupils. Then clonic movements of varying intensity occurred, to be followed by a period of stertorous snoring respirations which were almost constantly accompanied by a bright facial flush with no trace of cyanosis. This flush faded rapidly with the recovery of consciousness, leaving the patient cold and clammy as before. The rest of the attack followed the usual course, the patient having little or no recollection of what had happened. Cases have been seen that have had more than one bout of convulsions, but there were none in this series.

Other signs were: sighing respirations (3 cases), and uneasy movement of head and limbs (3 cases). Vomiting is not a common feature (1 case), although its incidence is probably higher than this series would lead one to suppose.

Blood Pressure and Pulse

Blood Pressure.—A high blood pressure and a high pulse rate were often seen before bleeding (Table I), due pre-

TABLE I.—*Blood Pressure and Pulse in 48 Donors who "Fainted" after Bleeding*

Case No.	Age	Sex	Blood Pressure							Pulse						
			Before Bleeding	Time after Onset of Faint						Before Bleeding	Time after Onset of Faint					
				5 min.	10 min.	15 min.	20 min.	30 min.	40 min.		5 min.	10 min.	15 min.	20 min.	30 min.	40 min.
1	30	M	—	—	75/50	—	85/60	85/70	125/90	—	—	60	—	64	70	68
2	18	F	—	95/75	—	90/55	—	120/80	—	—	76	—	88	—	80	—
3	34	F	125/85	85/—	95/55	85/55	—	95/65	110/85	92	52	74	68	—	68	76
4	25	F	130/95	95/65	95/55	95/55	—	95/60	115/—	88	72	—	—	—	—	—
5	27	M	—	85/50	115/70	125/85	—	—	—	—	64	80	72	—	—	—
6	30	F	150/90	100/65	—	135/75	115/75	—	—	140	80	84	—	—	—	—
7	40	F	135/65	105/65	145/90	—	—	115/75	—	68	64	64	—	—	64	—
8	20	F	135/105	95/60	115/65	—	115/75	110/80	—	120	76	84	—	88	88	—
9	19	F	115/75	105/70	105/75	—	—	—	—	96	84	88	—	—	—	—
10	—	F	115/75	85/65	—	—	115/75	105/65	105/60	84	72	—	—	84	96	105
11	34	F	80/50	—	—	—	—	—	80/50	56	—	—	—	—	—	65
12	48	M	—	90/55	125/85	—	—	125/90	—	—	46	68	—	—	84	—
13	22	F	—	95/55	95/70	—	100/65	—	—	—	56	80	—	74	—	—
14	45	M	—	70/40	95/60	105/80	—	125/85	—	—	36	52	56	—	60	—
15	—	—	—	—	—	62/40	—	—	75/40	—	—	—	—	—	—	—
16	31	F	—	—	—	120/80	—	—	—	—	—	—	—	—	—	—
17	36	M	—	100/60	110/75	—	—	110/70	110/85	—	62	76	—	—	—	76
18	26	M	—	120/80	—	—	120/80	—	—	—	50	—	—	54	—	—
19	22	F	—	60/—	100/60	—	—	—	80/45	—	45	64	—	—	—	68
20	18	F	—	80/65	100/60	—	—	—	110/65	—	48	56	—	—	—	60
21	36	M	—	70/—	100/50	—	—	115/75	—	—	54	58	—	—	64	—
22	51	F	—	—	70/—	70/—	—	60/—	70/—	—	—	68	82	—	68	64
23	27	F	—	45/15	—	70/50	—	86/50	—	—	60	—	65	—	68	—
24	35	M	—	70/50	—	—	105/65	—	—	—	—	—	—	—	—	—
25	47	F	110/90	—	80/65	—	—	110/80	—	—	—	—	—	—	—	—
26	—	—	—	—	130/90	—	—	140/95	—	—	—	78	—	—	80	—
27	25	F	—	—	85/60	—	—	105/90	115/80	—	—	42	—	—	60	64
28	19	F	—	100/60	—	90/60	—	—	—	—	74	—	74	—	—	—
29	35	F	120/60	90/50	—	90/50	—	95/55	80/45	82	54	—	72	—	54	74
30	39	F	110/65	80/40	85/40	—	—	90/50	90/50	80	56	56	67	—	64	64
31	41	F	130/80	90/60	110/80	—	—	100/70	—	84	64	66	—	—	—	—
32	—	—	—	90/70	90/70	—	—	—	—	—	74	72	—	—	—	—
33	38	M	—	95/60	—	115/70	—	—	—	—	60	—	68	—	—	—
34	20	F	—	110/70	130/90	100/75	—	—	—	—	76	90	88	—	—	—
35	34	M	130/90	115/65	110/65	—	—	125/80	—	82	60	72	—	—	62	—
36	—	—	—	70/50	80/60	—	75/50	75/50	100/65	—	50	80	—	80	77	84
37	40	F	115/80	85/60	—	—	115/70	—	—	82	60	—	—	70	—	—
38	50	M	—	95/60	115/80	—	—	110/70	—	—	76	66	—	—	68	—
39	—	M	145/80	85/55	—	—	95/55	—	95/60	60	40	—	—	56	—	56
40	52	M	125/75	—	40/—	55/—	—	—	110/70	—	—	40	48	—	—	56
41	28	F	165/95	80/55	135/95	—	—	65/35	140/85	136	60	84	—	—	60	96
42	28	F	115/75	105/75	—	—	115/70	100/70	105/65	84	72	—	—	84	136	96
43	43	F	180/95	100/70	—	105/75	—	95/70	105/75	112	60	—	66	—	72	66
44	31	M	120/70	55/35	105/65	115/75	—	115/75	—	70	38	60	54	—	52	—
45	27	F	165/75	145/70	—	—	—	—	—	110	82	—	—	—	—	—
46	45	F	165/85	95/60	120/75	—	—	—	—	84	60	86	—	—	—	—
47	26	M	165/100	145/85	145/75	135/75	125/75	135/85	—	80	72	80	20	60	72	—
48	47	F	—	75/45	—	115/65	95/70	90/65	—	—	40	—	64	80	80	—

sumably to nervousness. In this series it was not possible in most cases to take readings at the onset of the attack, but five minutes afterwards the blood pressure was considerably lowered in nearly every instance, Case 47 being a notable exception. No constant relation between the level of the blood pressure at this period and the severity or duration of the attack was noted—e.g., Cases 23 and 44 both had low pressures at five minutes, the former was still low at thirty minutes, while the latter felt and looked well with a normal blood pressure at fifteen minutes. Case 47 had a blood pressure of 165/100 before bleeding. He had a typical convulsive attack, at the end of which his blood pressure was still raised (165/88). It may be argued that a fall in pressure may have occurred during the four minutes the attack lasted. Such a speedy recovery has not, however, been noted in any other case. Many donors who show no untoward effects (Table II) have a slight fall in blood pressure, but in those who faint the fall is larger.

Pulse Rate taken at the Wrist.—As is the case with blood pressure, high figures in the pulse rate before bleeding were not unusual. A fall in the rate was common to all donors, being more pronounced in those who fainted.

TABLE II.—*Blood Pressure and Pulse in 26 Donors who did not Faint*

Case No.	Sex	Age	Blood Pressure				Pulse			
			Before Bleeding	Time after Bleeding			Before Bleeding	Time after Bleeding		
				5 min.	15 min.	30 min.		5 min.	15 min.	30 min.
1	F	27	128/75	122/78	—	115/72	77	69	—	75
2	F	26	98/52	92/56	94/54	—	58	64	58	—
3	M	21	130/90	145/95	145/85	—	80	94	76	—
4	M	40	110/75	102/65	—	—	82	82	—	—
5	F	28	142/90	—	—	120/—	74	—	—	94
6	F	—	135/70	128/80	120/75	—	90	90	78	—
7	F	38	120/70	110/80	—	—	75	80	—	—
8	F	21	130/80	120/90	—	108/80	83	93	—	80
9	M	54	188/110	178/115	—	140/90	87	90	—	92
10	F	22	112/80	125/88	—	90/70	130	126	—	120
11	M	64	215/130	215/135	180/105	—	86	82	72	—
12	F	35	155/95	135/85	135/95	—	80	88	80	—
13	F	54	160/100	165/95	155/95	—	100	88	86	—
14	F	37	120/80	135/85	125/95	—	86	88	86	—
15	F	34	120/80	100/76	—	—	102	76	—	—
16	F	53	160/95	170/105	170/95	—	94	92	82	—
17	M	36	125/80	135/90	125/75	—	66	64	62	—
18	M	31	180/100	175/105	170/105	—	90	90	84	—
19	F	52	125/60	140/90	—	—	84	74	—	—
20	M	57	155/95	140/85	—	—	64	62	—	—
21	M	36	140/90	135/85	135/85	—	92	90	74	—
22	F	54	195/100	150/95	145/85	—	90	74	62	—
23	F	22	125/95	125/85	—	105/85	72	74	—	72
24	F	60	105/75	120/70	—	—	80	80	—	—
25	F	22	80/62	100/70	—	—	80	76	—	—
26	F	18	144/90	122/75	—	—	106	80	—	—

As can be seen in Table II, the pulse rate by no means always fell and rose with the blood pressure (Case 9).

Symptoms

The following are the commonest symptoms: faintness, dizziness, or giddiness (28); nausea or an uneasy feeling in the epigastrium (14); feeling of heat (7), which, when it occurs, is usually the first indication that something is wrong. Very rarely there was a sensation of coldness (1). Other uncommon symptoms were sensations of tingling (4), general numbness (1), yawning (3), a desire to defaecate (2), blurred vision (1), and ringing in the ears (1). It is not uncommon for donors to sleep after a severe faint, sometimes for as long as two to three hours, although there were no examples in this series. Only two cases of actual defaecation were seen during a year's observation of donors. Both occurred on the same morning. They are not included in this series, and detailed observations were not made. The first case was that of a young man who had a severe and prolonged faint; he expressed the desire to defaecate, and had to be carried to the lavatory and supported there. He had only one loose motion. He had to be detained for some time afterwards, and left more than an hour after bleeding. The other case was that of an older man, who also had a prolonged and severe faint.

Clinical Types

Faints vary in severity. They may be arbitrarily divided into the following clinical types: (*a*) mild, showing a transitory pallor, clamminess, and faintness, with pulse and blood pressure which fall but recover their original level rapidly—e.g., Case 6; (*b*) severe, showing great pallor, with drenching perspiration, and a large fall in pulse rate and blood pressure, which take a long time to return to normal—e.g., Case 39; (*c*) mild or severe, with associated vomiting; (*d*) mild or severe, with associated convulsions; (*e*) mild or severe, with both vomiting and convulsions (severe type, Case 29). There is not a case in this series with vomiting alone, but such do occur.

Recovery Period

The recovery period varies greatly, from a few minutes to an hour or more. In 38 cases an attempt was made to discover whether the blood pressure or the facial pallor returned to normal first. In 18 cases the relationship was missed, as they were first seen when pallor and low blood pressure were present together, and later when both were back to normal. In 8 cases the blood pressure was normal while pallor was still present. In 2 cases the colour was normal before the blood pressure, while 10 cases were sent away with a low blood pressure. The probability is that in the last-mentioned group the colour returned to normal before the blood pressure, since patients are not discharged as a rule until they look and feel well. The time taken for recovery of blood pressure varies. In Case 22, for instance, forty minutes after the onset of the attack the systolic blood pressure was still only 70 mm. Hg, while in Case 44 the pressure returned to 115 mm. Hg fifteen minutes after the onset.

It is not uncommon to see donors improve temporarily, then relapse—e.g., Case 41: this is a mild example of the repeated faint. A man of 60 had to be kept for over two hours because whenever he lifted his head he fainted again. It is not uncommon to hear of factory workers fainting an hour or two after they have returned to work apparently quite well.

Recovery in cases with convulsions (Cases 7, 9, 15, 29, 30, and 47) tends on the whole to take longer than in cases without convulsions. Experience in the past has shown that patients with convulsions are likely to sleep for one to three hours before returning home. They often wake up feeling perfectly well, and are always anxious to come back and "behave better" next time. They do not seem alarmed by their experience.

Discussion

Points which appear of particular interest in the series of "faints" described here are: (1) That pallor may persist when blood pressure returns to normal. (2) The prolonged nature of the attack in certain instances: the ordinary "vasovagal faint" is usually considered a transitory phenomenon.

The present vasomotor phenomena have many points in common with those recorded by Lewis (1932) in soldiers with "effort syndrome." He cites as predisposing factors youth, poor physical condition, fatigue, and emotional stress. The possible influence of such factors in causing the donor to faint will be discussed at a later date. In Lewis's cases syncope was the central feature of the attack, and was accompanied by feelings of irritability, dizziness, nausea, pallor, sweating, and a fall in blood pressure and pulse rate. In some cases clonic spasms were noted. Lewis

points out that these attacks rarely occurred while the subject was lying down. The majority of faints in donors, however, take place in the recumbent position, which may well account for the fact that in most cases loss of consciousness does not occur. The removal of blood also introduces a possible modifying factor which was not present in the type of patient studied by Lewis, although there is no obvious relation between the amount of blood removed and the severity of the attack.

Ferris, Capps, and Weiss (1935) and Weiss and Baker (1933) in their investigations of patients suffering from hypersensitivity of the carotid sinus also produced, by pressure on the sinus, phenomena very much like those described here. That unconsciousness and convulsions were more common in their cases may again possibly be accounted for by the difference in posture, since some at least of these patients were sitting or standing. They found a lack of relation between pulse and blood pressure, and in some cases there was no fall in either. They postulated three mechanisms responsible for these attacks: (1) vagal, causing slowing of the heart or asystole which might result in a secondary fall in blood pressure; (2) depressor reflex, causing a primary fall in blood pressure; and (3) cerebral, due to local anaemia from contraction of small cerebral vessels, causing fainting without pulse or blood-pressure change.

All the cases in this series could be placed in one or other, or a mixture, of these categories. It does not seem likely, however, that fainting attacks occurring in donors are due to hyperirritability of the carotid sinus, for it is an uncommon condition and more frequent in older persons and arteriosclerotics, whereas the incidence of faints in donors is higher in the younger section of the population. It seems reasonable to suppose, however, that the attacks in donors are brought about by the same efferent pathways as those in the carotid sinus syndrome and that the carotid sinus is one of many receptor organs from which the afferent impulses start.

Phemister and Livingstone (1934) describe a case, closely resembling those in this series, of a man aged 28 who fainted while blood was being drawn for a Wassermann test.

Stead (1940) and Wallace and Sharpey-Schafer (1941) have made some observations on collapse after and during bleeding, and have recorded phenomena similar to those here described, but since they were removing much larger quantities of blood (760 to 1,220 c.cm.) it is difficult to correlate their results with the observations in this paper.

It is not possible from the data available from this series to interpret details of the vascular changes which take place.

Case Histories

Case 5.—Male aged 27. Two or three minutes after bleeding had started the nurse noticed flickering of the eyelids, and soon afterwards the donor felt breathless and faint. The respirations were deep and sighing: B.P. 75/45, P. 60. The blood was flowing well and the donor's colour was good. The needle was removed and the head of the couch lowered. Four minutes later the patient was pale and sweating, but was breathing normally: B.P. 85/50, P. 64. After a further four minutes he walked into the recovery room. Sixteen minutes after bleeding the donor felt and looked perfectly well: B.P. 125/85, P. 72.

Case 6.—Female aged 30. She had neither been bled nor had fainted before: B.P. 150/90, P. 140. She was pale beforehand, but flushed when bleeding started. After three minutes the flush faded: P. 100. She began to sigh and make vague gestures with her hands. Suddenly she became very pale and felt nauseated. The stream was slowing, and after four minutes the needle was removed, 450 c.cm. of blood having been taken: B.P. 85/50, P. 56. She was very pale and clammy; the head of the couch was lowered. Three minutes after the bleeding had stopped the donor's colour was returning and she felt better: B.P. 100/65, P. 80. She was allowed to walk to the recovery room. Twelve minutes later she was still a little pale, but felt quite well. Twenty-one minutes after bleeding the colour was quite restored: B.P. (sitting) 115/75.

Case 7.—Female aged 40; weight 10 st. Before bleeding, B.P. 135/65, P. 68. Three minutes after venepuncture the donor flushed and went pale in the course of half a minute; she felt faint and the bleeding was stopped. She lost consciousness and there was twitching of the right arm and leg, with head and eyes deviated to the left: B.P. 95/—, P. 52. Two minutes after the convulsion the patient was very pale and clammy: the head of the couch was lowered. Four minutes later she was a little less pale: B.P. 105/65, P. 64. After a further 6 minutes the colour was much better: 26 minutes after bleeding the patient looked normal and felt quite well: B.P. (standing) 115/80, P. 64.

Case 9.—Female aged 19. This donor was nervous beforehand: B.P. 115/75, P. 96. She became pale in the course of bleeding and the stream slowed. Three minutes later she had a right-sided convulsion lasting half a minute; after this, B.P. 85/65, P. 84. Ten minutes later she felt quite well and her colour was normal: B.P. 105/75, P. 88.

Case 10.—Female. B.P. 115/75 before bleeding, P. 84. Immediately after bleeding she felt sick and dizzy; she was sweating slightly but was not pale: the head of the couch was lowered. After 5 minutes she walked to the recovery room and collapsed on a bed; 2 minutes later she was pale: B.P. 115/75, P. 80. After 38 minutes she felt well and had a good colour: B.P. 105/60 only, P. 105.

Case 11.—A woman doctor aged 34. She was not nervous: initial B.P. 80/50, P. 56. At the end of bleeding she felt slightly faint and nauseated and had a desire to defaecate. She was pale: B.P. 70/50, P. 82. The pallor persisted for 20 minutes; 40 minutes later B.P. still 80/50, P. 65. Subsequent observation has shown this to be the donor's normal blood pressure.

Case 23.—Female aged 27. She was rather nervous and had fainted once before. At the end of bleeding she flushed and then became pale, and the skin was clammy: B.P. 45/15, P. 60; 15 minutes after bleeding, B.P. 70/50, P. 65; 30 minutes after bleeding, B.P. 86/50.

Case 29.—Female aged 35. She was not nervous beforehand, but had fainted on two previous occasions unassociated with bleeding: initial B.P. 120/60, P. 82. After bleeding, which took ten minutes, B.P. 108/60, P. 79. She immediately felt hot and clammy, and as if her stomach were turning over. Her legs tingled and she had a desire to sit up, but was unable to do so, "as if something were smothering me." She lost consciousness: her eyes rolled and the pupils were dilated; the jaws were clenched and there were clonic movements of the upper limbs. After the attack she raised her head and wondered where she was. The clamminess was more marked, but began to disappear after 15 minutes: B.P. 90/50, P. 72. Thirty minutes later she sat up for tea; she felt sick and vomited, but felt better afterwards: B.P. 80/45, P. 74; colour improving. Sixty minutes after the attack, B.P. 60/30, P. 76; 20 minutes later, B.P. 80/50, P. 68; and after a further 15 minutes, B.P. 100/60, P. 67.

Case 30.—Female aged 39. Before bleeding, B.P. 110/65, P. 80. After bleeding she felt hot and her "body sinking"; she knew she was about to faint; there were restless movements of the head and legs. She lost consciousness and had mild tonic and clonic spasms; afterwards she was cold and clammy: B.P. 80/40, P. 56. An hour later she was sent home by car: B.P. 90/50, P. 64.

Case 37.—Female aged 40. As this donor was known to have fainted before, she was watched carefully. Initial B.P. was constant before bleeding at 115/80. She showed no untoward signs until two minutes after bleeding had been stopped, when she felt her head buzzing and suddenly became cold, clammy, breathless. She felt better as soon as the head of the couch was lowered. After 4 minutes, B.P. 85/60, P. 64; after 7 minutes, B.P. 100/70, P. 64; after 11 minutes, still a little pale; after 20 minutes, B.P. 115/70, P. 70, colour normal.

Case 39.—Male. Initial B.P. 145/80, P. 60. After the blood had been flowing for 5 minutes the patient became pale and the hands clammy; the stream began to slow: B.P. 75/40. After 6 minutes he complained of faintness and dizziness; the

pallor increased. The needle was removed and the head of the couch lowered. Two minutes later he was still pale: B.P. 85/55, P. 40. Five minutes later his colour was a little better. Twenty minutes later he was still rather pale, but feeling well: B.P. 95/60.

Case 41.—Female aged 28. She was nervous beforehand, but had neither fainted nor been bled before: B.P. 165/95, P. 136. During bleeding she felt throbbing in the left arm, sick, "peculiar," and faint. She covered up her eyes and said she felt warm. Bleeding was stopped after 4 minutes, when 250 c.cm. had been taken. Two minutes later the donor was very cold and clammy: B.P. 80/55, P. 60. Eight minutes later she was still pale but not sweating; she said she felt better, and walked into the recovery room. After 33 minutes she said she felt quite well, but while the blood pressure was being taken she felt faint and lay down: B.P. 65/35, P. 60. After 43 minutes she was still pale; she walked across the room and sat down. At 56 minutes she was still pale, but felt well: B.P. 140/85, P. 96.

Case 42.—Female aged 28. Initial B.P. 115/75, P. 84. She was quite well during bleeding, but 3 minutes later felt sick and dizzy, but was not pale: she was sweating slightly. The head of the couch was lowered; 5 minutes later she walked to the recovery room, where she "flopped down on a bed." After two minutes, B.P. 115/75, P. 80; 20 minutes later, B.P. 100/70, P. 136; 38 minutes after bleeding she felt and looked normal.

Case 47.—Male aged 26. This donor was very nervous and had often fainted before, but had not previously been bled. After bleeding for one minute, when only 100 c.cm. had been taken, he became pale; the pulse slowed and became impalpable. The needle was removed and the head of the couch lowered. He suddenly developed a typical convulsive attack, during the course of which he was pale, cold, and clammy; towards the end he flushed and then became pale again, recovering consciousness in 4 minutes. After 25 minutes he stood up; he was very pale and sat down again. Five minutes later he was still pale and feeling faint. Fifty-six minutes from the onset he was still faint and pale. Discharged and sent home by car. Before bleeding, B.P. 165/100, P. 80; at end of attack, B.P. 165/85, P. 60; after 8 minutes, B.P. 145/85, P. 72; after 13 minutes, B.P. 135/75, P. 80; after 22 minutes, B.P. 125/75, P. 60; after 30 minutes, B.P. 135/85, P. 72; after 56 minutes, B.P. 120/75, P. 64.

Summary

Observations have been made on a group of donors who fainted as a result of blood withdrawal, and the incidence of the different signs and symptoms has been analysed. Illustrative cases are given.

The majority of donors show a fall in pulse rate and blood pressure, but this is not invariable.

The faint in donors has so many points in common with the syncopal attacks described by Lewis in soldiers with effort syndrome, and by Ferris, Capps, Weiss, and Baker in individuals with hyperactive carotid sinuses, that it appears possible that the underlying mechanism of their production is the same. Modifications of the picture are probably due to the fact that the donor is in a recumbent position.

REFERENCES

Ferris, E. B., jun., Capps, N. B., and Weiss, S. (1935). *Medicine*, **14**, 377.
Lewis, T. (1932). *British Medical Journal*, **1**, 873.
Phemister, D. B., and Livingstone, E. H. (1934). *Ann. Surg.*, **100**, 714.
Stead, E. A., jun. (1940). *J. clin. Invest.*, **19**, 776.
Wallace, J., and Sharpey-Schafer, E. P. (1941). *Lancet*, **2**, 393.
Weiss, S., and Baker, J. P. (1933). *Medicine*, **12**, 297.

C. P. Ward (*Arch. Pediat.*, 1941, **58**, 83), who records a personal case, illustrates the rarity of encephalomyelitis in measles by the fact that there were only five examples of this complication among 11,747 cases of measles. His patient was a girl aged 6 years, who developed severe encephalitis at the height of measles. For several days the prognosis appeared hopeless, but the encephalitis subsided and was followed shortly afterwards by transverse myelitis with flaccid paralysis and incontinence of urine. After nine days of complete paralysis recovery began and became complete, except for spastic paresis of the legs noted two months later.

LOCAL EFFECTIVENESS OF SODIUM SULPHACETAMIDE (ALBUCID SOLUBLE) IN TREATMENT OF EXPERIMENTAL ULCERS OF THE CORNEA

BY

J. M. ROBSON, M.D., D.Sc.
Lecturer in Pharmacology, University of Edinburgh

AND

G. I. SCOTT, M.A., M.B., F.R.C.S.Ed.
Ophthalmic Surgeon, Major, R.A.M.C.

(From the Department of Pharmacology, University of Edinburgh)

There has been considerable discussion recently as to whether sulphonamides are capable of exerting their chemotherapeutic action when applied locally. Extensive trials have been made of the value of these drugs in the treatment of infected wounds and burns (see Colebrook, 1941; Buxton, 1940). While no general agreement has yet been reached, the consensus of opinion, based on clinical evidence, would seem to be that they are effective for some types of infections provided they are applied prophylactically or in the early stages of the infection.

There is, however, little experimental evidence concerning the value of locally applied sulphonamides in the treatment of infected wounds. A number of investigators have shown that some sulphonamides will prevent the development of gas gangrene when given locally together with the infecting organism. A delay of a few hours, however, greatly decreases the effectiveness of the drugs, and most, if not all, of the infected animals rapidly die (Legroux, 1940; Hawking, 1941; Gordon and McLeod, 1941). Nitti (1939) showed that the local application of sulphanilamide to wounds infected with streptococci in rabbits would prevent death of the animals.

The Investigation

It appeared to us that the eye would provide a very satisfactory medium for the study of the action of locally applied drugs on infection. The course of the infection can be followed accurately, and observations can be made as often as desired without unduly disturbing the animals. Moreover, each experiment can be very satisfactorily controlled, since one eye in each animal can be used for comparison. Rambo (1938) performed a few such experiments on rabbits, and the results suggested that the injection of sulphanilamide together with haemolytic streptococci into the anterior chamber of the eye would prevent the occurrence of a destructive infection.

Progressive septic lesions of the eye can easily be produced experimentally by infecting the cornea with *B. pyocyaneus* (see Axenfeld, 1908). It has, moreover, been shown (Joy, 1940) that the course of such lesions in rabbits can be favourably influenced by the oral administration of sodium sulphapyridine. We therefore decided to determine whether the local application of a sulphonamide would affect the course of such an actively progressive and destructive lesion.

In deciding which sulphonamide to use in these experiments we considered that the following properties were desirable: (1) it should have a high solubility in order to produce a reasonably high local concentration; (ii) it should be non-irritant; (iii) it should form a solution which does not deviate a great deal from neutrality; and (iv) it should readily penetrate into tissues.

Few of the known sulphonamides possess the above properties. One compound which does, however, conform

to the above standards is sodium sulphacetamide.* Since we had used this compound previously, in as yet unpublished experiments, with very satisfactory results, and since it has also been used with satisfactory results in the form of a paste applied locally in the treatment of burns (Robson and Wallace, 1941), we decided to employ it in the present investigations.

Methods

All experiments were performed on mature rabbits, of both sexes and of several breeds. Following various preliminary experiments a technique was devised by which a standard lesion of the cornea could be produced. In all the experiments such lesions were made in both eyes of every rabbit, one eye being treated while the other was used as a control. Great care was taken to make sure that the lesions were equal in both eyes, and on the few occasions when there was a slight inequality the treatment was applied to the eye with the larger lesion.

The lesion was produced under ether anaesthesia by removing the corneal epithelium with a discission needle. The area denuded was carefully measured by means of callipers and was usually about 4×4 mm. in extent. Accurate observation was assisted by the wearing of a Bishop Harman binocular loupe. In order to make quite certain that equal lesions were being produced the denuded areas in both eyes were, in preliminary experiments, stained with 2% fluorescein and were found not only to be equal in area but also to stain with equal intensity.

The lesions were inoculated with a culture of *B. pyocyaneus* by means of a metal loop. For each experiment a fresh twenty-four-hour culture on agar slope was prepared from a stock culture. (We are greatly indebted to Dr. Oag of the Bacteriology Department, University of Edinburgh, for the supply of these cultures.) After the application of the culture the lids were held apart for one minute and then allowed to close.

At periods of 1, 5, and 12 hours after application of the culture treatment with sodium sulphacetamide solution (30%) was begun. The lids were separated, and the lower lid pulled away from the eyeball, after which a few drops of the solution were placed on the cornea and into the lower conjunctival sac. This treatment was repeated four or five times daily. On each occasion a similar quantity of normal saline was applied by the same method to the control eye.

The eyes were examined daily during the first week, and thereafter at intervals of a few days. Detailed records were kept regarding the condition of the cornea, lids, and conjunctiva. After a note had been made of the amount of conjunctival discharge and the degree of corneal damage, a few drops of 2% fluorescein solution were instilled into both the treated and control eyes, and a note was made regarding the exact state of the corneal epithelium. Particular attention was paid to the degree of corneal oedema, the presence or absence of ulceration, abscess formation, or hypopyon. The eyes were usually photographed at 48 hours, towards the end of the first week, and towards the end of the period of observation, when the lesions in untreated eyes had either led to gross disorganization or become quiescent scars.

In the experiments in which treatment was started 12 hours after production of the lesion the eyes were carefully examined before the first treatment, by which time a definite, active, infective lesion was quite evident. In most cases the lesions were exactly equal in both eyes, although in a few there was a very slight difference; in the latter cases the worst lesion was chosen for treatment.

The lesions in the control eyes developed along very definite lines although there were variations in severity. Twelve hours after inoculation the appearances were those of an infected abrasion. There was oedema at and around the site of the lesion; most of the lesion stained with fluorescein, although a certain amount of epithelization was occurring at the margins. There was also definite conjunctival and ciliary injection and some iritis. At 24 hours there was definite corneal ulceration, which then rapidly progressed until at 48 to 72 hours the ulceration was severe and fairly extensive, and in some cases ring abscess formation was evident, with or without hypopyon. At the beginning of the second week the ulceration or abscess formation had in most cases involved almost the whole of the cornea; some of the eyes perforated and ultimately shrank, while others developed gross vascularized scarring of the cornea, with staphylomatous changes in most cases. In a few animals scarring, although dense, was limited to an area involving about half of the cornea.

Conjunctival discharge had in most cases become fairly copious by the second day; but the conjunctivitis was not of long duration, and by the end of the first week there was, as a rule, little or no discharge.

Effects of Treatment

The effects of treatment, begun respectively at 1, 5, and 12 hours, on the corneal lesions are summarized in the table. It will be seen that when treatment was started

Table showing the Effect of Local Treatment with Sodium Sulphacetamide (30%), Begun at Various Periods after Inoculation with B. pyocyaneus, on the Development of Corneal Lesions

	Treatment begun after	No. of Eyes showing			
		No Ulcer	Moderate Ulcer	Severe Ulcer	Extensive Necrosis
Treated eyes	1 hour	11	4	2	0
Control eyes		0	4	4	9
Treated eyes	5 hours	5	0	2	5
Control eyes		0	0	3	9
Treated eyes	12 hours	2	1	8	1
Control eyes		0	0	2	10

1 hour after inoculation the effect was very pronounced. Ulceration was prevented in about two-thirds of the treated eyes, and in no case was there extensive necrosis; whereas in the control eyes ulceration occurred in all cases and extensive necrosis in more than half. By 24 hours the beneficial effect of treatment was usually evident, and the difference was considerable at 48 hours.

The treatment had also a beneficial action on the conjunctivitis: 10 out of the 17 treated eyes showed no conjunctival discharge, in 6 it was slight, and in 1 it was moderate. Of the control eyes 10 showed slight discharge: it was moderately severe in 6, and copious in 1. The condition of the treated and control eyes of a typical animal is shown in Fig. 1 (rabbit 322). It can be seen that, while the control eye had developed along the course described above, the lesion in the treated eye rapidly healed.

When treatment was started 5 hours after inoculation the effect was still quite pronounced, although not so striking as when treatment was instituted at the earlier stage; thus whilst ulceration was prevented in 5 out of 12 eyes, 5 of the treated eyes did develop extensive necrosis. The conjunctivitis was also beneficially influenced by treatment at this stage. Of the treated eyes, 7 showed no discharge, 4 slight discharge, and 1 moderate discharge; while in the control eyes discharge was evident in all cases, being slight in 4, moderate in 7, and severe in 1.

* This is the sodium salt of sulphacetamide, with which it must not be confused, since the latter has a low solubility and has to be administered orally.

When treatment was delayed until 12 hours after inoculation its value was very definitely lessened. Nevertheless even at this stage it exerted a beneficial effect in most instances. Ulceration was totally prevented in only 2 of the animals in this group, but on the other hand the lesions in the treated eyes were less severe than in the controls. The difference is well illustrated by the course of the lesions in rabbit 384 (Fig. 2). When examined at 12 hours, immediately before treatment, the lesion in the right eye was very slightly more severe than in the left, and the right eye was therefore chosen for treatment. Seventy-two hours after inoculation both eyes showed moderately severe corneal ulceration, which was slightly more extensive in the control eye. The ulcer in the treated eye gradually healed, leaving a fairly dense scar, which is clearly visible in the photograph. The ulcer in the control eye rapidly spread to form a ring abscess, and ultimately there was gross scarring which involved the greater part of the cornea.

Although conjunctivitis was again not a marked feature in the clinical picture, treatment had some beneficial effect; conjunctival discharge was present in all but one of the control eyes, whereas in 10 out of the 12 treated eyes no discharge was noted.

Discussion

This investigation has shown definitely that under the experimental conditions described a sulphonamide can produce its chemotherapeutic action when applied locally.

The problem of the period after infection at which local application of sulphonamides can still control such an infection is of great importance in connexion with the treatment of wounds, and especially of war wounds. It is therefore of particular interest to note that, in the present experiments, when the drug was applied for the first time 1 hour after inoculation with the organism the beneficial effect of the treatment was most pronounced; at 5 hours there was still a very definite effect; and even at 12 hours a certain degree of benefit was produced.

These results are in general agreement with the clinical experience that prophylactic treatment with sulphonamides must be instituted at the earliest possible moment in order to provide the maximum benefit. This point of view has been emphasized by Buttle (1940) in his discussion of the part played by chemotherapy in the treatment of wound infection.

Our results suggest that sodium sulphacetamide penetrates readily through the cornea, and experiments only recently reported by J. M. Robson and W. Tebrich show that this is the case. Indeed, under certain conditions it has been possible to produce, by the local application of a solution of the drug to the conjunctival sac, concentrations in the cornea, aqueous, and iris which are much higher than can be produced when sulphonamides are administered orally or parenterally. Quite

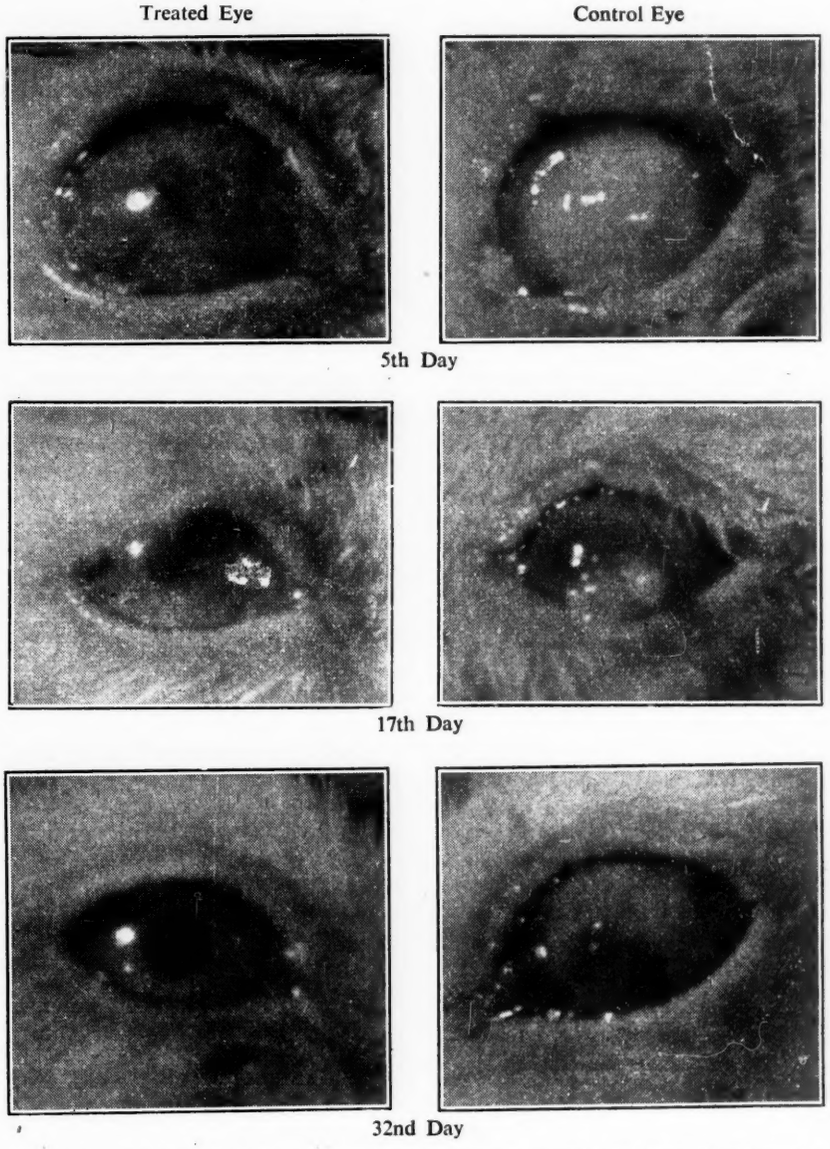


FIG. 1.—(Rabbit 322.) Showing effect of treatment started one hour after inoculation. Right eye treated with 30% sodium sulphacetamide; left eye control. The treated eye showed an infected abrasion which was fully epithelized by the 5th day; the resultant scar was very faint and superficial, and cannot be seen on the photograph. The control eye showed an abscess involving two-thirds of the cornea by the fifth day. By the 17th day the cornea was markedly staphylomatous and had actually perforated; by the 32nd day the whole cornea was grossly scarred and the eye was shrinking.

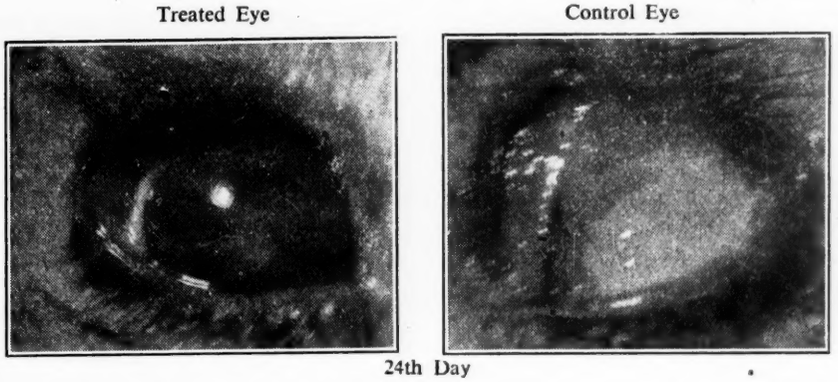


FIG. 2.—(Rabbit 384.) Showing the effect of treatment begun at 12 hours. Photographs taken on 24th day after inoculation. The treated eye has a fairly dense central scar, slightly larger than the initial lesion. The control eye shows gross scarring of most of the cornea.

high concentrations are present in the cornea even within five minutes of the application of the drug. Of interest, too, is the fact that sulphanilamide has also been shown to penetrate readily through the cornea, especially when it is put in the conjunctival sac in the form of a powder (P'an, 1941); under these conditions high concentrations were found to be present at the end of one hour.

These experimental results suggest that the local application of certain sulphonamides might be of value in the treatment of infective conditions of the eye. The oral administration of sulphonamides has already been used in the treatment of trachoma (Lian, 1938; Loe, 1938; Thygeson, 1940), and although the drugs have not been proved to have any action on the trachoma virus itself, there appears to be general agreement regarding their value in controlling the secondary infection. There are, however, very few records regarding the value of locally applied sulphonamides in the treatment of eye conditions, although Johnstone (1941) has used various sulphonamides locally, in solution or as a powder, for the treatment of hypopyon ulcers.

During the past year sodium sulphacetamide has been used in the eye wards of the Royal Infirmary, Edinburgh (Traquair, Cameron, Paterson, Flint—personal communications) in the treatment of various infections of the eye, and especially of hypopyon ulcers of the cornea. The impression has been obtained that this treatment is of considerable value, although much further work will be necessary to assess this value accurately. Concentrations of the drug up to 30% have been used in this clinical work, and have produced no irritation or other ill effects, thus emphasizing the advantages of a substance which gives a neutral non-irritant solution.

Summary

Equal areas of corneal epithelium were removed from both eyes in a number of rabbits and the lesions infected with *B. pyocyaneus*. In all animals one eye was used as a control, the other eye being treated with a 30% solution of sodium sulphacetamide. All control eyes developed severe corneal ulceration.

When the first treatment was applied 1 hour after inoculation with the organism, ulceration was completely prevented in 11 out of 17 eyes; when it was applied 5 hours after inoculation, ulceration was completely prevented in 5 out of 12 eyes. When the first treatment was applied 12 hours after inoculation, ulceration was prevented in only 2 out of 12 eyes; the lesions in the 10 remaining eyes, however, were less severe than in the control eyes.

The relevance of these findings to the clinical use of the drug for the treatment of infective eye conditions by local application is discussed.

We are indebted to Mr. A. W. Edwards of British Schering Ltd. for the supply of the 30% sodium sulphacetamide solution. We should like to thank the W. H. Ross Foundation for the Prevention of Blindness, which defrayed the expenses of this investigation.

REFERENCES

Axenfeld, T. (1908). *The Bacteriology of the Eye*, Baillière, London.
Buttle, G. A. H. (1940). In *Wound Infection*, p. 47, Lancet Ltd., London.
Buxton, St. J. D. (1940). *British Medical Journal*, **2**, 802.
Colebrook, L. (1941). *Proc. roy. Soc. Med.*, **34**, 337.
Gordon, J., and McLeod, J. W. (1941). *Lancet*, **1**, 407.
Hawking, F. (1941). *British Medical Journal*, **1**, 263.
Johnstone, I. L. (1941). *British Medical Journal*, **1**, 887.
Joy, H. H. (1940). *Proc. Soc. exp. Biol.*, N.Y., **45**, 709.
Legroux, R. (1940). *Mém. Acad. Chir.*, **66**, 415.
Lian, B. (1938). *Geneesk. Tijdschr. Ned.-Ind.*, **78**, 1058.
Loe, F. (1938). *J. Amer. med. Ass.*, **111**, 1371.
Nitti, F. (1939). *Bull. Acad. Med.*, Paris, **122**, 432.
P'an, S. Y. (1941). *Proc. Soc. exp. Biol.*, N.Y., **46**, 31.
Rambo, V. C. (1938). *Amer. J. Ophthal.*, **21**, 739.
Robson, J. M., and Wallace, A. B. (1941). *British Medical Journal*, **1**, 469.
Thygeson, P. (1940). *Amer. J. Ophthal.*, **23**, 679.

DELAY IN THE UNION OF FRACTURES

BY

T. P. McMURRAY, M.Ch., F.R.C.S.Ed.
Professor of Orthopaedic Surgery, Liverpool University

While it is a common practice to describe the normal healing of fractures as a process which extends over a period of a certain number of weeks, it is recognized that the rate of union is not the same in all areas. Fractures occurring in the neck of the femur and in the carpal scaphoid unite slowly and uncertainly, probably on account of the peculiarity of their blood supply and the difficulty of maintaining the fractured surfaces in apposition for a sufficiently long period. A similar sluggishness in the normal process of union is also found in fractures of the tibia, particularly in the region of the junction between its middle and lower thirds. At this site delay in union is common and definite non-union is occasionally seen, apparently in spite of adequate treatment. In this case the delay cannot be attributed to difficulty in maintaining apposition of the fractured surfaces, but seems to be caused by the absence of any vascular muscle attachment to this area of the bone and by the necessary restriction of blood supply to an easily torn nutrient artery. The lagging in the normal process of union at this point has long been appreciated, but since the beginning of the war the delay has been greater and has occurred in a higher percentage of cases than previously.

Rate of Union

Figures collected by different surgeons with respect to the normal rate of union of any particular fracture are of comparatively little value, because the standard varies so greatly as to what clinical and *x*-ray evidence constitutes union. It is therefore impossible to set down any specified number of weeks as the normal period for union in a particular fracture treated adequately and continuously, but it can be agreed that if, after fourteen to sixteen weeks of complete immobilization, union is not yet present in a perfectly reduced fracture of the tibia the designation of delayed union may safely be applied.

Owing to the transference of patients in wartime from one hospital to another it has been possible to examine a vary large number of fractures at all stages of treatment, and the original impression that the rate of union of fractures of the tibia is much slower than previously has become a conviction. The reason for this alteration in the normal rate of union must be either a change in the patient's metabolic processes or some alteration in the generally accepted standard treatment for this type of fracture. It seems impossible to accept the suggestion of a change in the patient's metabolic processes, especially as there has been little or no alteration in the rate of union of fractures of other bones. The only alteration in treatment during the past few years is the almost universal adoption of non-padded plaster casts for the treatment of every fracture of the lower limb.

For the promotion of union in any fracture there must be apposition of the fractured surfaces and immobilization of the broken bone for a period long enough to permit consolidation of the callus. Fractures will unite even though there is not exact apposition of the broken surfaces; in fact, it has been shown by Wardle that the rate of union in a fractured tibia is greater with slight overlapping of the bone ends than with perfect apposition. Similarly, if complete immobilization has not been secured union may occasionally take place rapidly and completely. This is illustrated in fractures of the clavicle and in fractures of

the femur in children treated by suspension, where complete immobilization is impossible.

The following are typical examples of seventeen patients treated adequately in non-padded plaster cases for fracture of the tibia and fibula. These reports illustrate the slowness of union which is so often caused by this form of treatment, and suggest a simple method by which union may be hastened.

Cases of Slow Union in Non-padded Plaster

Case 1.—This patient, a sergeant, had a fracture of the tibia and fibula in the lower third of the leg, treated by fixation in a non-padded plaster, which included the knee-joint. Reduction gave little trouble, as the fracture line was almost transverse, and the patient walked in the cast after two weeks' recumbency. After the third cast had been removed twenty-two weeks later there was no clinical or *x*-ray sign of union, movement being free at the site of fracture. The *x*-ray photographs showed almost perfect apposition of the fractured surfaces without sclerosis of the bone ends and with a slight degree of decalcification. A calliper splint and a cloth boot were applied, and in this apparatus the patient walked about freely and without pain. After eight weeks, union was complete clinically and almost complete radiologically.

Case 2.—Fracture of both Bones in the same region: reduction was excellent, and a non-padded plaster cast was applied. In this the patient walked continuously, starting three weeks after its application; but on removal of the second cast eighteen weeks later the conditions present were almost identical with those of the first patient. A calliper splint and a cloth boot were applied, and in nine weeks union was complete both clinically and radiologically.

Case 3.—A gunner aged 27 had a simple fracture of both bones of the leg—fracture long transverse—reduced and put in non-padded plaster. Eighteen weeks later, when the second plaster was removed, non-union was apparent. Radiographs showed perfect apposition, no sclerosis of the bone ends, and no sign of new callus formation. A calliper splint and a cloth boot were fitted, and in seven weeks union was sound; at the end of another two weeks the calliper was removed and freedom of the limb was allowed for increasing periods.

Discussion

These observations suggest that the immediate application of a non-padded plaster cast does not help in bone formation, even though it provides complete immobilization and maintains the corrected position. When used, especially in the early stage of treatment, it permits the formation of the haematoma which should be present in every fracture and which provides a scaffolding for the formation of bony callus. If the application of the closely fitting non-padded cast is delayed for a week until the haematoma has formed and has partly consolidated, these disadvantages are not present, and during this preliminary period alignment and apposition of the fractured surfaces can be secured by the use of a padded cast or gutter.

In using a calliper splint in this way to promote union the principle adopted is that described by Thomas in the treatment of delayed union of fractures by venous congestion. The calliper is applied to the limb with a long back knee-pad, extending from above the joint to the top of the boot, supporting the fracture posteriorly. The use of a boot, the upper of which is made of cloth rather than of leather, is an essential part of the treatment; by this means sores which would otherwise form over the back of the os calcis are prevented, and the soft boot may be kept on day and night. Once a day the boot is carefully removed without disturbing the fracture, and the back of the heel is gently rubbed with methylated spirit and dusting-powder to harden the skin and prevent irritation. When clinical and *x*-ray evidence of union is apparent the splint may be discarded at night only for a week or two, and then removed without risk.

SUICIDAL COMPROMISES: PSYCHOPATHY AND REHABILITATION

BY

HENRY WILSON, M.D., M.R.C.P., D.P.M.

Psychiatrist, E.M.S.

The hysterical fugue must at its beginning be a dramatic event. When reconstructed under hypnosis or evipan narcosis the patient recalls the change from normality to the pursuit of a course entirely different from that originally intended. The latter in not a few cases was a suicidal gesture which failed of achievement only because of the altered personality which was suddenly substituted for the one intending suicide. The patient, an individual of less than normal toughness, had been under duress; his schemes had failed; an abrupt ending of his life seemed the only solution. And suddenly this course is ended, and he wanders from the riverside or railway track, to be found some hours later having lost his memory—an amnesia usually stretching from some distance before the suicidal intent to some period after.

The Compromise of the Hysterical Fugue

The hysterical fugue is a compromise solution. The patient's determination to give up in view of his difficulties is prevented by the emergence of a different personality. Like Sir Thomas Browne's great amphibian, the fuguer lives in divided and distinguished worlds, but, unlike the philosopher, cannot pass willingly from one to another. A little introspection allows all of us to admit that the contemplation of suicide as a means of escape is not so rare as we might suppose. Everyone, if he is honest, will probably confess occasional fleeting impulses of this sort. What prevents it? Usually a recognition that the obstacles are but disappointments, looming large, which can be circumvented or tackled in satisfactory fashion. This entails criticism of our past methods, patience, and the knowledge that self-respect lost can be regained by fresh efforts and trials.

But it would be surprising if there was no connexion between the healthy individual's occasional thought of suicide and the condition of frustrated suicide which lies behind the hysterical fugue. Such a chain of connecting links is to be found. In the sense that suicide is a social problem, so also are the examples of the connecting links here presented. And it is because these have social as well as medical implications that they are described in terms of suicidal compromises.

We may remind ourselves that suicide occurs in a variety of conditions. In one group come cases in which as a result of confusion or intoxication the individual inadvertently does something resulting in loss of his life. To an intermediate group belong those cases in which as the result of delusion or of aural hallucinations the patient ends his existence. The deluded group contains persons so depressed that they believe they have done irreparable wrong, for which *felo de se* is the only solution. Volition is retained in those who are suffering from incurable or painful disease, in those persons in primitive societies upon whom custom forces suicide—e.g., suttee—and in depressed individuals not deluded so much as mistaken. These mistaken individuals include "the hysterics who commit suicide." It is now recognized that a diagnosis of psychoneurosis or hysteria does not automatically eliminate the danger of suicide. When this occurs it will generally be found that the individual expressed or indicated during life an exaggerated desire for revenge for some real or fancied slight.

In this latter group *might* belong those who would have committed suicide had not the fugue intervened.

Like the normal person who occasionally toys with suicide, the last group feel that withdrawal from their apparently insoluble problems is the only means of resolving them. Hamlet expressed their problem :

> " Whether 'tis nobler in the mind to suffer
> The slings and arrows of outrageous fortune,
> Or to take arms against a sea of troubles,
> And by opposing end them ?"

The healthy individual readily admits that there is a component of fierce resentment against foes or fate in his suicidal musings : what distinguishes him from the type portrayed is his unwillingness merely to submit or receive pity alone. His disappointment is the stimulus for useful action, not for despair.

Withdrawal, Resentment, and Receptivity

Of the connecting links in the chain between the normal person's occasional triflings with suicidal thoughts and the suicide of revenge the simplest is the sulking of the disappointed individual who withdraws himself, upsets his environment, and silently claims attention. His companions are by this means tacitly implored to alter their treatment and to attend to his demands. He withdraws his attention from them, facially expresses his resentment or disappointment, and by his subsequent behaviour shows his willingness to receive compensation for their gibes or indifference. In this last respect his behaviour differs markedly from what I have called the normal's musings.

The hysterical dissociation of the jilted lover is another form of solution. Her hemi-anaesthesia follows a withdrawal of interest not only from the lover but from the world. She is receptive of pity, and it would appear that in some girls a factor in the dissociation is the lack of this pity in her immediate circle. Any long-standing hemianaesthetic is usually clearly resentful. Charcot's " *belle indifférence* " is so well recognized that it is forgotten that it is accompanied by much resentment about *the* symptom. The doctor's failure to cure this or the family's indifference to it are useful pegs on which to hang a resentment really directed to the jilting lover.

Of the more chronic type of suicidal compromise is masochism. This term for willingness to endure suffering and its enjoyment is usefully applied to a number of everyday happenings. The compulsive individual who has perfectionist aims which are never achieved ; the mother so busy over her children's clothes that she can never go out ; the busybody who ruffles everybody but achieves nothing ; the obstructionist who fails to take our advice for a hundred and one reasons and who implies that the blame is not his, are all examples of individuals whose very activity appears to cover up a deep-seated unwillingness to achieve even one minor success. They seldom if ever show an outspoken gesture of suicide ; in so far as their lives are arid and lacking any real success, they may almost be said to live suicide. In many ways their actions withdraw them from the real current of life, though they paddle in its superficial backwaters. They bemoan their lack of success but never blame themselves. They have long purses in which they receive the coin of others' commiseration.

There are some more specialized conditions in which the same characteristics of withdrawal, resentment, and receptivity are to be observed. Before describing them it would be well to define " withdrawal " as the lessening of normal interest in the outside world, whether this occurs in the previously exuberant or in the lifelong reserved individual ; and " receptivity " as a mental condition in which the individual appears willing to receive attention, support, sympathy, or money without showing any adequate response. These definitions might include many psychoses, toxaemic states, and some cases of early convalescence from physical disease, but they are seldom associated with resentment.

Post-traumatic hysteria is characterized, over and above the continuous pain or disability, by loss of interest in outside events. The one certain fact the patient recalls is the precise date of his accident ; and he often shows a resentment apparently out of all proportion to circumstances (e.g., towards the medical practitioner appearing on his behalf) and a willingness to go on seeing debts pile up and his family starve without making any vigorous attempt to help them. In these cases more than in others is the paradox between the individual's capacity and his execution most marked, associated with a deterioration in general which might seem psychotic.

The same characteristics of withdrawal, resentment, and receptivity are to be found in the drug addict, in the self-mutilator, and to a less extent in the accident-prone.

Finally, it is worth considering anorexia nervosa. Whether or not we regard a wholly non-organic factor as being its cause, withdrawal and deterioration are prominent features. Resentment is seldom far away, and receptivity (by definition) present ; though this is not the reaction to proffered food. In this condition, in post-traumatic hysteria, and in drug addiction, suicide is the exception rather than the rule, though the misery of the individual might seem to warrant it. One might think that these patients regard a living death with less distaste than normal persons do. Like some compulsionists, they live suicide.

In describing these persons as displaying suicidal compromises we can obviously include a number of the " neurotic " as well.* But I would avoid that term in this instance in favour of " psychopath," defined as applying to those who are a *nuisance* to themselves or others, described brilliantly by Taylor in an article (1941) entitled " The Psychopathic Tenth." He speaks of them as those flooding psychiatric service hospitals, out-patient halls, and shelters. " They collect certificates, they drink medicines." Their lives are marked by withdrawals, resentment, receptivity. They do not commit suicide. They live it, and commit neurosis. In short, they repudiate social obligations, they are parasitic. They receive much from their environment and their doctor, but give little or nothing. Is it any wonder that the healthier members of society tend to despise them or to lecture them ? We are disconcerted when these latter efforts fail, and Taylor's advice that " we display toleration, kindness, and above all understanding," though apparently less ambitious than sermons, will certainly yield us less irritation than our contempt.

The Social Misfit

Where, however, our therapy seems so unsuccessful it may be wise to ask whether our views about the social misfits can be expanded in some way that will help us and help them. Would it be unfair to say that we regard these patients' symptoms as excrescences of their personality that should be cut off ? Ought we not to remember that in each of them there is a big hole which may be filled by their efforts and our own ?

The first step in the filling of this hole is clinical perception of the problem of each case. This has been admir-

* No attempt is made to delimit various types of psychoneurosis from others. To a greater or lesser degree in each type can some suicidal compromise be found. What I wish to imply is that recognition of these abnormal drives, referred to by Freud as " death-instincts," may enlarge our outlook and help to bridge the gap between the physician of mental disorders and the physician who in general work meets so many psychoneurotics and psychopaths.

ably described by Prof. D. K. Henderson (1939). He uses the term "psychopathic states" in a narrower sense than Taylor, but he asks that psychopaths be looked at in terms of Meyer's psychobiology—with a full appraisal of the constitutional and environmental factors. This is becoming more possible because of the supply of psychiatric social workers and of other social agencies.

Such an approach enables us to perceive in each the withdrawal, resentment, and receptivity which are seldom far to seek. But we must admit that we have previously met these problems largely in a spirit of defeatism, and we can do little to curb receptivity if we have nothing to put in the place of giving medicines (which the patient frequently claims does him no good yet he cannot eschew) and certificates. Psychotherapy in the narrow sense is possible for selected cases, but certainly impracticable for all.

The expulsive power of a new affection is an old remedy for the love-sick. Our failure to give it to many of these psychopaths is a truism. Despite efforts to arrange his life, the traumatic hysteric continues to mope at home, the drug addict to escape from contacts with others which should interest him. Their very unwillingness to give our plans reasonable trial disappoints, indeed angers, us. Believing that we are socially alert ourselves, when we see social parasitism in others we do not only brush away the symptoms, we brush away the patient too.

Freud has described the first two stages of emotional development as oral-erotic and oral-sadistic—the first as one of receptiveness and sucking, the second as one of biting. No attempt is made here to correlate these descriptions specifically with the conditions described. These patients, however, live as infants in the passive stage of babyhood, and what they so lamentably lack is any willingness to bite into their difficulties. They may be said to fail, at any rate in part, because they will not or cannot show that hardness or determination which biting symbolizes—the traumatic hysteric in his feeble attempts to use the affected part, the drug addict to overcome the temptation offered, the jilted lover to bite into herself and expose and criticize those weaknesses on account of which her lover has grown tired. "Taking arms against a sea of troubles" is a sublimated form of biting despite the stretched metaphor.

Take the example of the small child who runs home because he considers that his friends have treated him badly. His mother can adopt two courses: (1) she can sympathize and urge him to remain with her; (2) she can sympathize and urge him to rejoin them, with a suggestion that this or that game be played, this or that be carried out. The first method intensifies his self-pity, the second stimulates a readiness in adaptability, the *sine qua non* of emotional growth. In the latter the mother implies that her protection and love will continue and even be increased if the child's reaction is adventurous.

Rehabilitation through Occupational Therapy

Now the method in the out-patient clinic is only too comparable to the first of the mother's alternatives. We prescribe sedatives, we write certificates, and in the crowded out-patient hall we provide the conditions for magnifying self-pity by discussion of symptoms. This is not so in the early rehabilitation of the injured workman. We stimulate him to begin using his tender limb or bruised back. He figuratively bites the handle of the gymnasium apparatus he is asked to hold or the rungs against which he presses. And as this process is repeated the work which these exercises give affords him more purchase and stimulates more aggressive activity against the obstacle. Rehabilitation, on this view, is successful not only because it exercises recently injured parts but because, without his knowing it, it draws the patient out, and he is active externally, not receptive internally. Resentment in which fear and aggressive impulses play such a part never develops, because the latter are finding an outlet in gymnastic duties.

A similarity at once presents itself between the rehabilitation block of the orthopaedic hospital and the occupational therapy department in the mental hospital. In the latter it is known that hitherto semi-stuporous idle, restlessly destructive, and other patients have for the first time begun to return to normal. Metaphorically, and without attempting to explain the fact in terms of psychopathology, occupational therapy has converted their attitude from one of passivity or destructiveness into the beginnings of constructiveness.

Are these observations relevant to the psychopath and our treatment of him? Occupational therapy and rehabilitation technique give the patient's disused or untrained biting instincts an outlet. Our present methods resemble far too closely the first of the mother's alternatives—placebos. All psychopaths would benefit by physical exercises suited to their conditions. These could be graded like diet sheets and prescribed for execution under expert attention in some room near the out-patient hall. Massage, another form of receptive therapy, would be taboo. The patient would then pass into another room, where simple occupational tasks would be undertaken for a prescribed time (half an hour, one hour, or longer), and then, and only then, would he return to the physician or to the surgeon, who would, if necessary, give medicine or certificate. It would be implied that as his efforts on the hospital's behalf became more, so his wish for placebos would become less.

It is obvious that any such scheme would require ingenuity, patience, and much toleration. But there are in every hospital jobs requiring to be done, and some not very skilled: addressing envelopes, salvaging envelopes, pasting on new labels, sorting papers, counting unimportant stores, washing endless gadgets, polishing others, mending and darning, salving string, wire, nails, and larger objects, rolling bandages, cleaning bottles, sorting corks; and simple constructional work, such as binding papers. If the will was there the work could be found. Some of it, a lot of it, might have to be done over and over again by different patients. But anything to replace the isolation of "the suburban neurosis" by something better than the idle gossip of the out-patient hall. Every hospital contains nursing and lay staff that could superintend these amateur efforts of the unemployable, and such responsibilities might well quicken probationers to the social as well as to the nursing problems that their vocation covers. This would not only fill the mind or some part of it with interest; that interest would be applied to overcoming obstacles, the exact antithesis of withdrawal and receptivity. So far as the patient is concerned this activity is not purely personal. It is done at the instigation (little or more) of the outside world. To comply with the simple demands is an acceptance (distorted it may be) of the challenge which that world makes.

It is clear that the withholding of medicine or certificates is of no value unless something constructive takes its place. Psychotherapy is useful if it can at once show the patient why medicines and certificates are withheld, but unfortunately a large percentage of the psychopaths (in Taylor's sense) are incapable of bearing such a denial. A method akin to rehabilitation or occupational therapy is necessary. If it can short-circuit the undesirable accompaniments of the out-patient hall so much the better.

I suggest that toleration, kindness, and understanding are not enough. We have failed if our methods perpetuate receptivity. The psychopath requires treatment which will replace that by simple measures that are biologically analogous to the stage which he has reached or has regressed to.

Conclusion

Two objections to the suggestions are not insurmountable—the difficulties of organizing any such scheme, and the danger that it would be used for merely punitive reasons.

To summarize, if the problem of chronic and subacute neurosis is recognized as one of social repudiation and parasitism in which the patient lives suicide, our task is to help the psychopath to return to the stringencies of life These are not always wholly painful, though they appear so. Every person who has withdrawn from active life into parasitism can theoretically be helped by methods in which his receptivity is not encouraged and his capacity for symbolic biting is stimulated. So great has the problem seemed in the past that we unwittingly perpetuate methods which intensify our patients' demands upon us. Forms of rehabilitation and occupational therapy can be made available for the psychopath, though they must not be substitutes for a full investigation of each case and suitable psychotherapy where this is practicable.

REFERENCES

Henderson, D. K. (1939). *Psychopathic States*, Chapman and Hall, London.
Taylor, S. (1941). *Lancet*, **1**, 321.

SULPHATHIAZOLE OINTMENT IN THE TREATMENT OF IMPETIGO

BY

ALEX J. STEIGMAN, M.D.

Physician to the American Red Cross - Harvard Field Hospital Unit

The recent increase in the incidence of scabies and impetigo is generally known (Buxton, 1941; Carter, 1941). This has created an important medical and economic problem. Industry and the military have both felt the pinch caused by the loss of time due to minor skin illness, which *in toto* creates a major problem. As a consequence a good deal of attention has been focused upon scabies and its complications. The purpose of this report is to call attention to an improved method of dealing with impetigo, a method which materially reduces the length of treatment.

Choice of Drug for Local Therapy

Accepted treatment to-day consists in the use of three chief groups of drugs—the mercurials, the organic dyes, and the sulphonamide compounds. In choosing a satisfactory agent for the local therapy of impetigo one should demand the following qualifications: rapid action, ease of application, freedom from local irritation and systemic toxicity, and non-staining to bedding and clothing. The success of local therapy depends upon two conditions: (1) contact between the drug and the infectious agent, and (2) bactericidal potency of the drug employed. The former is generally interfered with by crust formation, and the latter by the choice of a preparation which is not actively lethal for all of the organisms that may be present. The importance of softening and removing crusts as a preliminary cannot be over-emphasized, and will be referred to again. The point concerning the choice of a proper chemical agent leads directly to a consideration of the bacteriology of impetigo, a matter which is still in need of clarification. Although *Str. pyogenes* is more constantly found in association with impetigo than is any other organism, its aetiological significance is not always certain. Cruickshank (1941) recently reported on the bacteriological findings of 23 patients, and stated that 18 of the 23 showed *Staph. aureus*. He states that "the staphylococcus was regarded, rightly or wrongly, as a secondary invader."

Bacteriological examination of 25 patients suffering from impetigo revealed interesting results, quite in keeping with the findings of others. As will be pointed out, these findings led to the adoption of the treatment noted in this report. Briefly, the 25 patients gave the following cultural results: haemolytic streptococci (pure culture) in 12 cases: *Staph. aureus* (pure culture) in 8 cases; and a combination of these two organisms in the remaining 5 cases. Thus, in addition to haemolytic streptococci, it can be said that *Staph. aureus* was present in half of these cases. Whether or not it is present as a "secondary invader" is important from the standpoint of epidemiology but is of no consequence from the point of view of selecting local therapeutic agents. If the organism is present in abundance, then it must be dealt with, even though it did not initiate the process. It was therefore decided to use sulphathiazole locally to determine its effect, and to compare this effect with a commonly used mercurial preparation—namely, ammoniated mercury. Previous personal clinical experience with sulphanilamide and sulphapyridine employed locally in skin sepsis has been encouraging, and published reports have indicated the usefulness of these two sulphonamides for impetigo. Sulphathiazole was chosen in preference because it is effective against the staphylococcus as well as against haemolytic streptococci. The question of which of these two organisms is the primary invader must yield to the question of which of the sulphonamides will prove most effective in clearing up the lesions. MacKenna (1941) has found sulphapyridine superior to sulphanilamide. Carslaw and Swenarton (1941) used sulphanilamide ointment with some success, although they employed it for only two days and then changed to other methods; their ointment is a complex one, consisting of 5% sulphanilamide in glycerin, adeps lanae anhyd., and paraff. molle flav. As will be pointed out again below, a simple ointment of 5% sulphathiazole in paraff. molle flav. was used in the present study, and was employed throughout the treatment rather than being stopped in two days. Since this study was completed a report of the use of sulphathiazole locally for impetigo has appeared in the American literature (Sams and Capland, 1941). The authors used 10% sulphathiazole in a cod-liver oil ointment base. Their experiences are similar to the ones reported herewith, using 5% sulphathiazole in paraff. molle flav., and one wonders whether 10% is actually needed or whether the addition of cod-liver oil is of any value. From the standpoint of economy (more especially during these times), the unnecessary use of drugs and vehicles should be spared wherever possible. An even more recent report (Keeney *et al.*, 1941) gives the results of treating 12 children with impetigo using 5% sulphathiazole made up in equal parts of hydrous wool fat and vanishing cream. Those authors state that "after forty-eight hours definite improvement was noticed in each child." This is identical with the experience in the 51 children who are the subject of my report. It appears that the base employed makes little difference to the duration of treatment.

A Series of Cases treated with Sulphathiazole

Accordingly, 51 cases of impetigo were treated in the Eastern Hospital (L.C.C.) during July and August of 1941. These patients were all children, most of whom were suffering from one or other of the common infectious diseases

in addition to the skin trouble. It was possible not only to determine the length of time required to clear impetigo with sulphathiazole ointment but also to compare its clinical effect with that of dilute ammoniated mercury ointment. The principal distribution of the impetiginous lesions is shown in the following table.

Table showing Chief Distribution of Impetigo in 51 Cases

*Generalized	23	Trunk	4
Face	10	Limbs	4
Scalp	7	Ears	3

* Cases in this group were suffering from impetigo alone or in combination with scabies.

The plan of treatment was somewhat as follows: Instructions were given for all crusts to be softened and removed. This was done by applying tinct. sapo moll. (*B.P.C.*) to the lesions with the aid of a face-flannel. This was considered important, and was done for all patients regardless of which ointment was to be subsequently applied. Those patients with generalized impetigo were soaped and soaked in a warm tub if their clinical condition permitted. Twenty cases of severe generalized impetigo, some two-thirds of which were scabious, were then treated as follows: to one half of the body there was applied ung. hydrarg. amm. dil. three times daily, and to the other half 5% sulphathiazole ointment, also three times daily. The latter ointment was prepared simply by incorporating 5% by weight of powdered sulphathiazole in a base of paraff. molle flav. This preparation is easy to make and the drug is rather evenly dispersed in its base, although flecks of the chemical can readily be seen through the ointment. The results of this comparative study were most illuminating. After the second day of treatment it was always easy to state which preparation had been used on each side of the body. Impetigo treated with ammoniated mercury healed rather slowly though steadily, requiring an average of eight days. Impetigo treated with 5% sulphathiazole ointment showed improvement in forty-eight hours and was healed by the fourth or fifth day. Thus the time of treatment was reduced almost by a half.

In addition to the above-mentioned 20 cases, 31 patients were treated with 5% sulphathiazole ointment without attempting a comparison. These patients' lesions closely followed the course of the above—namely, noticeable improvement in forty-eight hours and healing in four to five days. Impetigo of the hairy scalp is more resistant, and a group of 7 patients required an average of eight days for healing. This, however, is a considerable improvement on other remedies in general use. Another matter arising from this investigation concerns the common combination of impetigo and scabies. It was found that treatment of the parasitic infestation was greatly facilitated by clearing up the impetigo first. Antiscabies therapy could then be carried out more efficiently, with less discomfort to the patient and few recurrences. To apply sarcopticides in the presence of widespread sepsis is urged by some, but is actually impracticable and extremely uncomfortable.

Summary

An investigation was undertaken to determine an improved method of dealing with impetigo. The report concerns results achieved with 51 children treated in hospital.

Comparison was made between the clinical effects of 5% sulphathiazole ointment and ung. hydrarg. amm. dil. The former induces healing in approximately half the time taken by the latter.

The importance of removing the crusts of impetigo lesions before the application of antiseptics is stressed.

The advisability of treating the impetigo of scabious patients before antiscabies therapy is discussed.

Local therapy with sulphathiazole is considered to be, at present, the ideal treatment for impetigo.

I wish to acknowledge my indebtedness to the Medical Officer of Health for the London County Council for the facilities granted to me at the Eastern Hospital, and to Dr. Norman Begg, medical superintendent of that hospital, for helpful criticism and advice.

REFERENCES

Buxton, P. A. (1941). *British Medical Journal*, **2**, 397.
Carslaw, R. W., and Swenarton, J. A. (1941). Ibid., **2**, 225.
Carter, Dorothy L. (1941). Ibid., **2**, 401.
Cruickshank, R. (1941). *Lancet*, **2**, 275.
Keeney, E. L., Pembroke, R. H., Chatard, F. E., and Ziegler, J. M. (1941). *J. Amer. med. Ass.*, **117**, 1415.
MacKenna, R. M. B. (1941). *British Medical Journal*, **1**, 981.
Sams, W. M., and Capland, L. (1941). *Arch. Derm. Syph.*, Chicago, **44**, 226.

Medical Memoranda

Meningococcal Meningitis in Advanced Pregnancy

The following case of meningococcal meningitis occurring late in pregnancy, with premature birth, is of interest. It was complicated by an abnormal mental condition, retention of urine, pyelitis, and a generalized eruption. The abnormal mental condition is of significance with regard to the view put forward that cerebral symptoms may be caused by sulphapyridine ; the infant seemed to be unaffected by this drug.

CASE HISTORY BEFORE LABOUR

A housewife aged 35, said to be six months pregnant, became ill at home on April 1, 1941, with headache and vomiting. She was admitted to hospital on April 5 rambling, and in a restless condition, with pronounced head retraction and a positive Kernig sign. Lumbar puncture was performed, and 20 c.cm. of turbid cerebrospinal fluid under pressure was withdrawn. Four 0.5-gramme tablets of sulphapyridine were given, and the patient was immediately transferred to the Watford Isolation Hospital. Examination of the cerebrospinal fluid showed 10,000 white cells per c.cm. (98% polymorphs and 2% lymphocytes) and large numbers of Gram-negative diplococci ; cultures yielded a pure growth of *Neisseria meningitidis*, Group I.

On admission to the isolation hospital (April 5) the patient was found to be in the above condition ; the temperature was 102°, the pulse 108, and the respirations 28. She was given an intramuscular injection of 5 c.cm. of soluseptasine daily for four days and 1 gramme of sulphapyridine four-hourly, the total dosage during this period—i.e., until April 8—being 20 c.cm. of soluseptasine and 20 grammes of sulphapyridine (this total includes the tablets taken before admission to the isolation hospital). She was also given morphine, paraldehyde, and phenobarbitone for her restlessness, which at night tended to become troublesome. The temperature varied from subnormal to 102° on the first day, and then gradually dropped until on April 9 it was below normal. The pulse and respiration rates remained at about 108 and 28 respectively. Her general physical and mental condition improved to some extent, but did not become normal.

On April 10 she developed retention of urine and had to be catheterized. The urine was acid in reaction, with albumin present: examination revealed a few red cells, pus cells, and granular casts ; culture yielded one colony of *B. coli*. Tenderness over the bladder and kidneys was suspected, but was not elicited definitely because of the mental condition. During the next few days the temperature gradually rose, reaching 100.4° on April 13, and, paradoxically, the pulse and respiration rates fell to normal. Her restlessness, confusion, and nocturnal delirium continued and were found to be complicated by some bilateral deafness, present before the onset of the illness.

Ante-natal examination showed the uterus to be 1½ to 2 inches above the umbilicus ; the small foetus was active, and the foetal heart was clearly heard, the rate being 140. The stage of development was put at 30-32 weeks. The blood pressure was 150/95. The pelvic measurements were normal, and vaginal examination revealed no abnormality.

PREMATURE DELIVERY AND PUERPERIUM

In the afternoon of the 13th the patient became more restless, and it was thought that labour was beginning. The nurse noted a slight show of mucus at the vulva. At 8 p.m. the os was found to be dilated to 1½ inches, with a vertex presentation in the right occipito-anterior position. At this stage the patient became very restless, and 1/150 grain of hyoscine was injected with good effect. The foetal heart rate was 160, and showed no significant change when checked half-hourly. Normal delivery occurred after six hours—i.e., at 2 a.m. on the 14th—followed, after a few minutes, by the expulsion of a normal complete placenta and membranes. Pitocin was then given, and good hardening of the uterus occurred; very little blood was lost. The infant was a female child with well-developed finger-nails. In the puerperium the patient received daily doses of ergot, and was given massive doses of potassium citrate for the urinary infection, with considerable improvement, though catheterization was still necessary. On the eighth day she passed a large clot of blood in the lochia, and after this she micturated normally; the lochia ceased on the tenth day. Following delivery her mental condition deteriorated; for two days she became more confused and tended to be violent, and appeared to be indifferent to her infant. Sedatives were continued, and in a few days her condition improved. On April 20 she had become quiet, and interested in ward happenings and in her infant; her powers of concentration and reasoning were still poor, and there seemed to be a complete amnesia for the period of her illness, confinement, and first part of the puerperium.

PROGRESS

In spite of the initial improvement from the use of potassium citrate, the urinary condition deteriorated after April 16, when the albuminuria increased, the deposit showing numerous pus cells and culture giving a profuse growth of *B. coli*. As already mentioned, she began to micturate normally after passing a large clot on the eighth day of the puerperium—i.e., April 21: the next two days there was some frequency and pain on micturition, and on the 24th she had a rigor, with a temperature of 102°. This exacerbation responded well to an ammonium mandelate mixture; and on the 30th the temperature became normal and the urine clear of albumin, though a few colonies of *B. coli* were grown from a catheter specimen.

On April 12—i.e., the day before labour began—a rash had developed on the upper part of the trunk. It was first morbilliform, then became erythematous and urticarial, and seemed to cause a fair amount of irritation. It spread to the neck and face, which became swollen, then to the arms and hands, and downwards to the trunk and lower limbs. The distribution was patchy. The rash began to clear up after five days (April 17), with irregular desquamation, but has left staining on the trunk and lower limbs as from the 24th.

The patient has one child, aged 7, and has had two miscarriages, the last being some four years previously. The expected date of this pregnancy was uncertain, as some periods occurred subsequent to conception; it was, however, calculated to be in the middle of June. This would make the birth some eight to ten weeks premature.

The infant was a female child of 4½ lb. It was put in a warmed cot, and subsequently cleansed with oil. Slight icterus developed, passing off in a few days. At first sterile water was given—one teaspoonful hourly for twelve hours—and then "C. & G." half-cream dried milk mixture—half a measure to 1 fl. oz. two-hourly, increased after two days to three-quarters of a measure. The weight dropped to 4 lb. on April 22 and then began to increase. The condition of the infant was satisfactory: there was no vomiting, the bowels acted twice a day, and the stools were normal. She was contented and quiet, slept well, and was developing a healthy cry. On discharge on May 10 both mother and infant were doing well. Subsequent progress was satisfactory.

My thanks are due to Dr. W. J. Cox for permission to report this case, and to Dr. D. G. W. Clyne for his assistance. The unremitting attention given to this difficult case by the nursing staff should be acknowledged; it contributed considerably to the recovery made by the mother as well as to the good progress of the infant.

T. G. OSLER, M.B., Ch.B.
Assistant M.O.H., Watford.

Reviews

INQUEST ON BIRMINGHAM HOUSING

When We Build Again. A Study based on Research into Conditions of Living and Working in Birmingham. A Bournville Village Trust Research Publication. With a foreword by Lord Balfour of Burleigh. (Pp. 138. 8s. 6d. net.) London: George Allen and Unwin, Ltd. 1941.

This is a useful addition to the growing literature of reconstruction. It presents the outcome of three years' research into Birmingham housing. A survey of housing is much more than a census of streets and estates; it must take into account location of industries, means of transport, and developmental possibilities of the surrounding country. This research publication probes further. Some seven thousand householders have been questioned as to the time it takes them, and what it costs, to travel to their work, how many of them go home for the midday meal, how their gardens are cared for and where their children play, how many are renting and how many buying their houses, and what reasons compel or persuade them to remain in their present dwellings or to seek a change. The results are recorded in some interesting tables and in diagrams in colour.

The brief story told in these pages brings home the fact that the vast suburban development which took place in the interval between the two wars was not as well planned as it might have been had a regional (and ultimately a national) planning authority been in existence. Of the more than a quarter million houses in Birmingham—the first city in England to put into execution a town-planning scheme—over 100,000 have been built since 1920. It would be stupid to pretend that they do not represent a large improvement on former conditions. One has only to look at the photographs of the back-to-back houses in Birmingham central wards—houses consisting usually of three rooms one above the other—to realize how depressing slum conditions can be, and although the rows and rows of "tunnel-back" houses of the middle ring are less grim, they are graceless and monotonous and some of them perilously on the edge of slumdom. The housing estates on the outer boundary and the in-town blocks of flats or maisonettes of terraced houses are more pleasing; nevertheless, the estates very largely are one-class dormitories, not too conveniently situated in relation to places of employment, and lacking a social centre and the essential integration of communal life, while the flats appear too often to be an excuse for crowding more people to the acre instead of a means of providing more open acres for those who must live in areas with a high density of population.

In the opinion of the compilers of this volume Birmingham is already big enough. The solid city area has stretched beyond its optimum size. They think that there should be a general limitation of building to the present city limits, with agricultural reservations immediately outside. These reservations would not only check unwieldy development but would assure sources of milk and other food near enough to the city to be consumed in a fresh and health-giving condition.

The book is illustrated with a large number of telling photographs. Two companion pictures are eloquent. One is a vista of the roofs of Bournville, built by the Cadburys in the late 'nineties, with about six houses to the acre, arranged in pairs and groups, gardens forming an important feature of the plan; and the other a similar vista of streets of "tunnel-back" houses, built at about the same period,

twenty or thirty to the acre, with small gardens hardly deserving the name, mostly littered with sheds. No further comment on the need for an enlightened housing policy seems necessary.

MEDICAL TREATMENT

Modern Therapeutics. Edited by Sir Humphry Rolleston, Bt., M.D., F.R.C.P., and Alan A. Moncrieff, M.D., F.R.C.P. The Practitioner Handbooks. (Pp. 365. 16s. net.) Eyre and Spottiswoode (Publishers) Ltd. 1941.

The Medical Clinics of North America. Vol. 25. Boston Number. No. 5, September, 1941. (Pp. 330; six volumes per annum. Cloth covers 75s., paper covers 55s.) Philadelphia and London: W. B. Saunders Company. 1941.

The increased interest now taken in treatment is reflected in the number of new books on therapeutics. The two before us—one British, the other American—cover much the same ground but follow a different plan: in the former the subject-matter is arranged according to groups of drugs, in the latter according to groups of diseases.

The *Practitioner* handbook on *Modern Therapeutics* leads off with an admirable article on the administration of drugs by the late Prof. A. J. Clark, whose untimely death was a sad blow to pharmacology. Where the general standard is so high it is perhaps rather invidious to specify individual articles; the reader's own interests will influence his preferences. To mention a few, however, we were particularly impressed by Dr. C. E. Newman's distinctly original and practical article on cholagogues and drugs acting on the liver. Prof. Mayrs and Dr. Crozier give an excellent account of diuretics and urinary antiseptics. Dr. Izod Bennett contributes a thoughtful article on drugs used in the treatment of gastric disorders, while Dr. H. M. Sinclair deals judicially and judiciously with the rapidly increasing vogue for treatment by vitamins. Dr. R. A. Young's ripe experience is shown in his chapter on expectorants and linctuses, but his application of the term "cholinergic" to the atropine group is perhaps a little misleading, since they antagonize the cholinergic fibres. The editors are careful to point out that their book is not intended as a comprehensive treatise on therapeutics; subjects have been chosen sometimes because of recent and important developments, and sometimes, although the drug is old and familiar, like digitalis, it is not always used to its best advantage. Reading through these pages one is forced to realize how much more scientific and discriminating therapeutics has become of recent years, and to what an extent parenteral methods of administration are replacing the oral route. A useful appendix gives the list of substitutes or equivalents for drugs the supply of which is short or entirely lacking at the present time.

In the latest number of the *Medical Clinics of North America*, some of the articles are frankly accounts of clinical demonstrations, such as that by Dr. Paul White on the treatment of common forms of heart disease, and by Dr. E. P. Joslin on the treatment of diabetes, a subject of which he is an acknowledged master; there is, however, a cautious tone in his estimate of the improved prognosis of the latter disease. Others are more systematic in form, but Dr. H. H. Merritt does not give much consideration to the psychogenic factors in epilepsy. The article by Drs. Foley and Andosca on conditions simulating pulmonary tuberculosis, well illustrated by radiographs, is particularly helpful. Drs. Lozner and Kark contribute an interesting account of vitamin K. Dr. Derow's article on the treatment of nephritis and nephrosis calls for special mention if only to emphasize his wise remark that elaborate and extensive studies and treatment in such conditions may precipitate heart failure, exacerbation of the uraemic state, or bronchopneumonia and rapid disintegration. We cordially agree.

THE C.N.S. IN INFECTIONS

Bacteriology in Neuropsychiatry. A Survey of Investigations concerned with the Specific Role of Infections and Immune Processes. By Nicholas Kopeloff, Ph.D. (Pp. 316. 25s.) Springfield and Baltimore: Charles C. Thomas; London: Baillière, Tindall and Cox. 1941.

The title of Dr. Nicholas Kopeloff's book *Bacteriology in Neuropsychiatry* may lead the reader to expect a reasoned discussion of the possible influence of non-specific infection in producing nervous and particularly mental disorders. If so he is likely to be disappointed, because this very important and controversial subject is dismissed in fewer than fifty pages. The conclusions reached on it are uniformly negative also, and although this sort of attitude may well be justified by the facts, it is not helpful when expressed with such finality. Thus it is concluded that no sufficient evidence exists of any connexion between focal infection, "auto-intoxication," and any form of mental disorder, or of the presence of any toxin in the body fluids in such conditions. The only positive admission in a debatable field in the whole book is really outside its scope: it is that allergy may play some part in epilepsy and migraine. There is an interesting chapter on the nervous control of antibody formation, which includes a brief description of the alarm reaction. Otherwise the book merely deals with microbic infections (not all of which are bacterial) in which the central nervous system may be involved, giving a brief account of the micro-organism and of the disease it causes. These are divided into affections primarily attacking the nervous system and those involving it secondarily; in the latter category are included leprosy, Weil's disease, dysentery, erysipelas, plague, and many other conditions in which neither the neurologist nor the psychiatrist need usually take any interest whatever.

The book would be of much greater value if all the references to diseases which affect the system only by producing such states as delirium were omitted, and if psychosomatic disorders with an infective or possibly infective basis were dealt with more exhaustively. Some useful lists of references are given.

AN OUTSPOKEN EDITOR

The 1941 Year Book of Public Health. By J. C. Geiger, M.D. (Pp. 544. 15s.) Chicago: Year Book Publishers, Inc.; London: H. K. Lewis and Co., Ltd.

The qualifications of assiduity, judgment, and knowledge of the matter in hand, which are useful aids to the preparation of any competent scientific summary, appear to be possessed in full measure by the editor of *The 1941 Year Book of Public Health.* He collates many periodicals, respects the adage *Ne quid nimis,* and comes forward himself from time to time in the role of critic. Compiled in California and published in Chicago, his book naturally takes most account of United States publications, but Canada and Latin America are included also. This country is principally represented by articles in the *British Medical Journal,* the *Lancet,* and the *Medical Officer.* The volume is arranged in sixteen divisions, of which the largest is that on communicable diseases. Other substantial parts are on medical care; child, industrial, and military hygiene; and laboratory research.

The editor's sizing-up of the various papers noticed, whether by way of dissent or commendation, is outspoken. Thus, commenting upon a contribution on leprosy he cautions the reader that "it would be dangerous to assume—with the author—that there is inheritance of a marked susceptibility to this disease." On a study of a laboratory outbreak occasioned by *Brucella melitensis* he says: "The author's suggestion that this extensive infection might have been due to carriers and human-to-human contact is indeed unique." On a paper entitled "Marriage and Mortality"

he observes: "The conclusions drawn are more or less assumptions due to the lack of supporting data." In another case he says: "This article offers nothing new." In this age of too facile praise such pronouncements render service by putting the partially informed on their guard against the hasty acceptance of imperfectly founded claims. It should be added that Dr. Geiger can be quite appreciative too, when he thinks the occasion fitting, as in remarks of which the following is a good example: "Levine has spent many years in the investigation of the coliform bacteria, and his work on these tests may be regarded as authoritative." This *Year Book* stands out as more interesting and readable than some others of its kind.

Notes on Books

Common Skin Diseases, by Dr. A. C. ROXBURGH, is deservedly the most popular and successful textbook of dermatology that has appeared for many years, and the fact that six editions have been called for in less than a decade is sufficient evidence of its appreciation by the profession in general. The author has taken the opportunity of keeping up to date with recent advances and also with the special problems associated with war conditions. Many will turn with interest to the chapters on scabies and pediculosis. Roxburgh has tried out the new preparations suggested for scabies and has come to the conclusion that the quickest treatment is by means of benzyl benzoate. In default of this, which is rather expensive and difficult to obtain, he uses 10% sulphur ointment for three days (many dermatologists consider this unnecessarily strong). Derris root (of which rotenone is the active principle) he does not think so much of; he states that it is less reliable than sulphur and sometimes causes a mild dermatitis. For pediculosis corporis he considers that the new, and still secret, powder "A.L. 63" is the best remedy yet produced. Another section of the subject of special interest in these times is the effect on the skin of avitaminosis. This chapter has been revised and enlarged. The author has paid special attention to the therapeutic side of his subject throughout, and not only the general practitioner, for whom (and his larval form the student) the book is primarily intended, but also the specialist will find many useful hints. This edition will maintain the reputation of its predecessors. It is published at 16s. by H. K. Lewis and Co.

Medical lexicography, as Fielding Garrison pointed out, made remarkable advances in the nineteenth century under the inspiration of Littré's gigantic accomplishment. Among the many notable medical dictionaries was that of George M. Gould (1890), who later became the first editor of the *Philadelphia Medical Journal* and of *American Medicine*. The large lineal descendant of that work, *Gould's Medical Dictionary*, has now reached its fifth edition under the sole editorship of Mr. C. V. BROWNLOW, and is published in this country by H. K. Lewis and Co. at 36s. Notwithstanding many new inclusions and thorough revision the number of pages is a little less than in the fourth edition of 1935. In gathering and arranging new words Mr. Brownlow has been interested to note that most of them fall readily into three classes. First and most important, there are new words expressing new ideas, inventions, or discoveries—these represent a genuine addition both to science and to language. Then there is the steadily growing list of proper names which are eponymic of new operations or tests. Thirdly, there is the large number of new remedies and other articles whose names appear in current medical literature. He has saved space and added to the usefulness of the dictionary by listing in the introductory pages all the common prefixes and suffixes; thus, for example, a number of compound words beginning with "dys" do not appear in the vocabulary where their meaning can be readily inferred by reference to the unprefixed word. The aim of the editor and publisher has been to be accurate and to make even more comprehensive and more helpful this new edition of a valuable work of reference which has always had admirers in this country. English users of "*Gould*" will note with regret that the spelling of sulphur and all its derivatives has now been changed, but they cannot blame Mr. Brownlow for this; he has merely conformed with the practice of the *U.S. Pharmacopoeia* and the publications of the American Chemical Society, and the needs of his fellow countrymen must take precedence of ours. So we shall have to put up with "sulfonamides" as we put up with "hemorrhoids."

The articles on "The Future of Medical Education" in our issue of September 6, 1941—by Prof. John Ryle from the point of view of the teacher, and by Mr. Donald McDonald from that of the student—aroused widespread interest. We have also published letters from officers of the newly founded British Medical Student Association on the attitude towards the curriculum of those who are undergoing it, and on other matters which are being considered by thoughtful students. That body has now issued a 2d. pamphlet from 3, King's Parade, Cambridge, entitled *Students and Medical Education*, giving an account of the B.M.S.A., with a foreword by Prof. Ryle, its president.

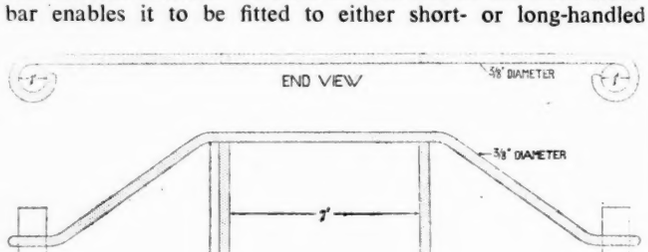
Preparations and Appliances

STRETCHER HEAD SUPPORT IN CASES OF SMASHED JAW

Dr. J. C. PAISLEY (medical officer of health, Portland) writes:

I enclose a drawing of an appliance, designed by the Portland Casualty Service, to be attached to the stretcher to facilitate transport of casualties with severe injuries to the mouth and lower part of the face. A.R.P. Handbook No. 10 advises that these casualties should be transported face downward with the head hanging over the end of the stretcher. This is extremely uncomfortable, and there is considerable risk of further damage by the jaw knocking against the cross-bar of the stretcher.

The appliance is made of 3/8-inch soft steel, and slips over the stretcher handles. A bend at each end of the front cross-bar enables it to be fitted to either short- or long-handled



stretchers. The end of a folded triangular bandage is knotted to the stretcher handle A, a round turn is taken round the longitudinal bar B, the broad part of the bandage passes under the forehead with another round turn at C, and the end is knotted to the stretcher handle at D. A second bandage is applied in the same way, but passing over the back of the head in front of the ears. This method keeps the head rigid and prevents further injuries; it is much more comfortable to the patient, and is very quickly applied.

If the appliance is not available, a similar method of fixation can be improvised with three stout splints. The appliance is inserted in the middle of a folded blanket on which the patient's chest rests, and the two projecting splints take the place of the longitudinal bars of the metal appliance.

BRITISH MEDICAL JOURNAL

LONDON

SATURDAY JANUARY 3 1942

YELLOW FEVER IN AFRICA

When in 1914 the Panama Canal was opened to shipping it was feared that yellow fever might be carried to Australia and the Far East. These fears, thanks to excellent maritime quarantine, were not realized, while, curiously enough, of the five ships quarantined in Australia after the appearance of cases of yellow fever on board during the voyage, only one actually crossed the Pacific—the barque *Grenada*, which arrived in Newcastle, N.S.W., from Guayaquil in July, 1911. The four others, all sailing ships, came round the Cape of Good Hope from ports in South America on the Atlantic seaboard. To-day, however, there are fears that yellow fever may spread not from South America to the East, but from Africa to India and Malaya. Since 1914 much has been learnt of yellow fever and many surprising events have occurred in its history. Thanks to the fact that after an attack of yellow fever immune bodies remain in the blood for more than fifty years, probably for life, and to the finding that the mouse is susceptible to yellow fever provided the virus can reach its central nervous system, it has been possible to map out the distribution of yellow fever in time and space. Such immunity surveys were begun in Africa in 1933 by the International Health Division of the Rockefeller Foundation (Hewer[1] ; Sawyer and Whitman[2]). These surveys showed that immunity could be found in the sera of Africans living as far east as the Equatorial Province of the Sudan and the Northern Province of Uganda (cf. Hughes, Jacobs, and Burke[3]). In 1934 Hewer[1] described a suspicious case from Wau in the Sudan which suggested yellow fever, while in 1938 Findlay[4] brought forward positive evidence that a European medical officer in the Nuba Mountains had suffered from yellow fever in the autumn of 1936. Further surveys in the Sudan (Kirk,[5] Findlay[4]) had in the meantime shown that a high-degree immunity to yellow fever was present not only in the Bahr-el-Ghazal region in the extreme south, but in the Nuba Mountains and, perhaps more surprisingly, in the Fung—the area between the White and Blue Niles which extends right up to the Sudan-Abyssinian border.

The validity of these surveys, of course, depended on the specificity of the mouse-protection test for immunity to yellow fever, as did the finding that between 1933 and 1938 there had occurred at Malakal, a port on the air route from Alexandria to the Cape, a surprising increase in the number of adults and children with immune bodies to yellow fever, although clinical cases of yellow fever had entirely escaped notice. However, the specificity of the mouse-protection test was fully demonstrated in October, 1940, when it became obvious that an extensive epidemic of yellow fever had been raging at least since June in the Nuba Mountains in those villages where previous surveys had shown that immune bodies were absent or present in only a small percentage of the inhabitants. Although some 15,000 persons were reported as having been infected, tests made on the bloods of Sudanese residents in the area who had not knowingly suffered from yellow fever showed a high percentage with immune bodies. At a moderate estimate (Kirk[6]) 30,000 persons must have been infected. Of the first party of Europeans sent to investigate the outbreak three out of four rapidly went sick with yellow fever : they had not received prophylactic immunization against it. There is no evidence that yellow fever has been recently introduced into the Sudan ; on the contrary, a study of the scanty historical evidence strongly suggests that the disease has been endemic for at least eighty years (Findlay[7]).

While yellow fever is thus found to extend at least as far east as the Sudan-Abyssinian border, the epidemiological picture of yellow fever has not become more simple. First of all it was found that in South America and in Africa more than 20% of wild monkeys from yellow-fever areas show immune bodies to yellow fever (Soper[8] ; Findlay and MacCallum[9]). Since then further examination of the sera of wild and domestic animals (Findlay[10] ; Bugher *et al.*[11]) suggests that yellow fever is primarily an infection, usually inapparent, of animals which is only accidentally and occasionally transmitted to man. This conception gains added support from the finding that in South America there are many areas where the domestic *Aëdes aegypti* mosquito is absent but where yellow fever is transmitted by forest mosquitoes, such as *Aëdes leucocelaenus, Haemagogus capricorni*, and certain Sabethine mosquitoes. In Africa the problem of jungle yellow fever is more complicated, since there is no area where *Aëdes aegypti*, almost certainly an Old World species, cannot be found. Epidemiological evidence, as in the Malakal district, strongly suggests that other mosquitoes may act as the primary vector in Africa. *Aëdes simpsoni, A. africanus, A. stokesi, A. luteocephalus, Taeniorhynchus (Mansonioides) africanus, Culex thalassius*, and *Eretmopodites chrysogaster*, among African mosquitoes, are known to transmit the virus of yellow fever under laboratory conditions.

It will thus be seen that the problem of the spread of yellow fever, first to the East African littoral and thence to India and the Far East, is more complicated than was at first thought. If yellow fever is going to spread to East Africa, it is sometimes asked, why has it not already done so? It has been suggested that there exists some biological barrier to its spread, but strains of *Aëdes aegypti* from East Africa, India, and Java transmit the virus as easily as strains from West Africa. The real reason why the disease has not spread seems to have

[1] *Lancet*, 1934, **2**, 496.
[2] *Trans. roy. Soc. trop. Med. Hyg.*, 1936, **29**, 327.
[3] Ibid., 1941, **35**, 131.
[4] Ibid., 1938, **32**, 323.
[5] *Bull. Off. int. Hyg. publ.*, **28**, 2340.
[6] *Ann. trop. Med.*, 1941, **35**, 69.
[7] Ibid., 1941, **35**, 59.
[8] *Rural and Jungle Yellow Fever : A New Public Health Problem in Colombia.* Bogota, Editorial Minerva S.A.
[9] *Trans. roy. Soc. trop. Med. Hyg.*, 1937, **31**, 103.
[10] Ibid., 1941, **35**, 51.
[11] *Amer. J. trop. Med.*, 1941, **21**, 309.

been lack of opportunity. As Findlay,[1] however, has pointed out, traffic in Africa has recently increased in both volume and velocity. In the lifetime of Europeans now living in Uganda it took between three and four months to walk—it was the only means of progress—from Mombasa to Kampala; the same journey can now be made by plane in from three to four hours. With increase in the number of motor roads and the provision of cheap motor buses the African is now travelling as he has never travelled before. The passenger in the motor-car is in fact as great a menace as the passenger in the plane, if not greater. That the parasites of infectious diseases are taking full advantage of increased travel facilities is shown by the sudden appearance in Brazil, after more than 400 years of association with West Africa, of the African mosquito *Anopheles gambiae*, with the later development in South America of a devastating malaria epidemic. The Eastern strain of equine encephalomyelitis virus, also mosquito-transmitted, is rapidly moving westwards in North America. Japanese Type B encephalitis, again mosquito-transmitted, has accompanied the Japanese hordes in their invasion of China.

Unless, therefore, adequate defence measures are taken in time there is no reason why, sooner or later, yellow fever should not appear in East Africa, and, apart from aircraft, there are already facilities existing for transmitting the disease from Uganda to India by means of Indians returning in boats from Mombasa. Fortunately in prophylactic immunization we have an important means of preventing the spread of the disease. Nevertheless the problem of the control of the disease is one which cannot be undertaken by one country alone. If ever there was a problem urgently requiring international co-operation and agreement, here it is. Such co-operation will not, however, be too easy to arrange, for there is still much ignorance and apathy to be overcome; even in British possessions threatened by the introduction of yellow fever officials can still speak of "the yellow-fever racket," or adopt an attitude of *laissez faire* when precautionary measures are suggested. It is still not realized that once yellow fever has been introduced into new countries its eradication may well be a long, and certainly will be a costly, matter. The best precautions are often those that in the end appear to have been the least necessary. But the end of yellow fever in Africa is not yet.

WORLD MALNUTRITION

"Like an iceberg, nine-tenths of our malnutrition, and the most dangerous part, is under the surface." These illuminating words were spoken by Dr. Thomas Parran, Surgeon-General, U.S. Public Health Service, at the closing session of the National Nutrition Conference for Defence held in Washington at the end of May. The report of this conference[1] is full of interest to all concerned with the connexion between the quality and quantity of a nation's food and the well-being of its citizens, whether at peace or at war. In a comprehensive survey of the problem Dr. Russell M. Wilder discussed before the conference the findings of the Committee on Foods and Nutrition of the National Research Council, of which committee he is chairman. There, as in a lecture delivered on similar lines in April,[2] Dr. Wilder makes abundantly clear that the problem of malnutrition in the United States, even though that country is correctly described as the richest in the world, is no less urgent than in the British Empire, and indeed does not differ significantly in kind or in degree from our own. The same deficiencies—of, for example, protein, calcium, vitamins A, B_1, and C—are there and are due to the same conditions—the need in a widespread industrial community for portable, durable, and therefore "refined" foods; ignorance among all classes of how to make good what the refining processes have removed; and, above all, poverty. Dr. Wilder and Dr. Parran cite in support of their general thesis and of their particular examples an imposing array of experts both from their own country and from ours. The names of Spies, Sydenstricker, Tisdall, Parran, and Williams are as well known to nutritionists on this side of the Atlantic as are those of many British workers on the other: all are in agreement on the general thesis. The difficulties of calling together at Washington a representative conference of nine hundred delegates—physicians and surgeons, physiologists and biochemists, statisticians and food technologists, social and domestic economists, agriculturists, teachers, labour and consumers' representatives, and Government officials—must have been considerable. Yet the overwhelming success of the conference gives ample ground for the belief that the still vaster difficulties of calling corollary conferences in forty-eight States and in 3,000 counties will be faced and overcome. The United States of America, it is true, was not at that moment at war, but difficult as our conditions are here, we should reflect upon the possibility of holding such a conference in this country.

The National Nutrition Conference for Defence passed a series of five major recommendations to the President. Of these the fourth was concerned with the lines of attack on the problem of under-nourishment (a term used synonymously with malnutrition throughout the sessions). This fourth recommendation was itself divided into twelve specific proposals, of which we have space here to quote only the third: "Vigorous and continuous research to add to our present knowledge of the nutritional needs of individuals, the nutritional status of groups in the population, the nutritive content of everyday foods, and the effects of various methods of processing, stirring, and cooking on their nutritive value." This proposal clearly implies—the whole tone of the conference confirms the implication—an investigation that is not merely nation-wide but is also planned and co-ordinated on a national scale. For a country of nearly 130 million people covering an area of over 3,700,000 square miles the mere concept of such a co-ordinated plan is boldness itself.

Is research being properly planned and co-ordinated in this country? Or are there too many separate and autonomous authorities working along separate and unrelated lines? Or, again, are active workers being given full opportunity to make their contributions in both

[1] *Publ. Hlth. Rep.*, Wash., 1941, **56**, 1233.

[2] *Ann. intern. Med.*, 1941, **14**, 2189.

experiment and organization? The National Nutrition Conference in the U.S.A. is a stimulus to emulation. The complex of economics and agriculture, on which the production of abundant and suitable food depends, is world-wide. Dr. T. W. B. Osborn of Johannesburg has recently published (in Afrikaans and English) his evidence before the Industrial and Agricultural Requirements Commission of last March, in a pamphlet entitled "Remedies for Poverty and Malnutrition in South Africa." Although the major portion of his remarks are concerned with social, financial, and political matters, the first six pages tell the all-too-familiar story. Articles in the Canadian and in the South American medical press bear witness to the awakened food conscience of the world—a conscience that is stirred by the unhappy plight of the plundered countries occupied by Germany. Malnutrition, like peace and war, is indivisible.

The facts have been realized now for some years by medical and other experts on nutrition; they have percolated to thousands of the general public; in this country the Government has established a wartime Ministry of Food that bases its policy, so far as is possible, on the findings of nutrition. There seems to be an unanswerable case for planned, coherent, and intense national action, even if only as a prelude to that international action which will be required on the nutritional front during the world-wide difficulties of post-war reconstruction. Sir John Orr at the recent meeting of the British Association put forward in characteristically simple and cogent style arguments in which the case for such action was implicit.

HEART FAILURE IN VITAMIN B_1 DEFICIENCY

Alcoholic neuritis, relatively rare in this country, is now believed to be due to deprivation of vitamin B_1, but it is important to recognize that alcoholic poisoning may cause cardiac failure, which is usually accompanied by a peripheral neuritis but may occur independently. Although the number of cases so far reported is small, the condition should be widely known for the reason that appropriate treatment is as a rule rapidly effective, while treatment for congestive heart failure on the usual lines is of little or no avail. Alcoholism causes vitamin-B_1 deficiency in three ways: first, through anorexia and deficient ingestion; secondly, by way of achlorhydria the gastric contents become alkaline and inimical to the vitamin; and, thirdly, utilization of the vitamin may be adversely affected by liver damage. It might be expected that in a disorder such as this both sides of the heart would suffer, and the cases described in this country have usually had pulmonary congestion, indicating left ventricular failure, and systemic venous engorgement and enlargement of the liver, indicating right heart failure.[1,2] The common early symptoms are oedema, shortness of breath, and cough. The oedema is, however, not typically cardiac in that it is widespread (the face often being puffy) and sometimes precedes the dyspnoea—the reverse of the usual order in heart failure. It has, moreover, been noted that the degree of oedema is excessive in proportion to the venous congestion. Normal rhythm with tachycardia is the rule, though auricular fibrillation was found in three of a series of 98 cases by S. Weiss and R. W. Wilkins.[3] No details of these three patients are given, and before ascribing a symptom to vitamin-B_1 deficiency the possibility that avitaminosis may be no more than a precipitating factor in chronic cardiovascular disease has to be borne in mind. Changes in the form of the electrocardiogram have been noted in most of the published cases. C. C. Dustin, H. Weyler, and C. P. Roberts[4] show that T-wave changes resembling those of acute cardiac infarction can occur, but that they develop and disappear with unusual rapidity. In the diagnosis of "avitaminosis-B_1 heart" in this country the chief points are a history of alcoholism and deficient diet (rarely poor diet alone, as, for example, in the case of Swan and Laws[2] and in one of Konstam and Sinclair's cases[1]); the absence of any other adequate cause; the age and sex of the patient, who is most often a man in early middle age; a low blood content of the vitamin (Konstam and Sinclair); and, finally, the therapeutic test. Rest, digitalis, and mercurial diuretics will accomplish little, but parenteral injection of vitamin B_1 will generally dispel symptoms in a few days.

[1] *Brit. Heart J.*, 1940, **2**, 231.
Ibid., 1940, **2**, 241.

CHEMOPROPHYLAXIS OF GAS GANGRENE

The extent to which chemotherapy can alter the outlook in gas gangrene was one of the problems which the war was expected to decide. Singularly little information from the clinical standpoint has yet come to light, doubtless because casualties have occurred only under conditions highly unfavourable to careful study. There has been no neglect of study in the experimental field, and in reviewing the work of several investigators[5] early last year we pointed out that their results, though pointing in general to the same conclusion, conflicted in detail, evidently owing to variations in technique. There are many possible variables in experiments of this kind, including three principal micro-organisms, several methods of inoculation, three or more therapeutic agents to test, and different times and methods for their administration. It may be added that all animals do not necessarily behave alike, and that antitoxin may or may not be included in the scheme of treatment. This study has naturally also been taken up in Germany, and H. Th. Schreus of Düsseldorf and two colleagues[6] have lately recorded a long series of experiments bearing on it. They adopted the method of Friedrich, which consists of burying a measured amount of soil suspension in the guinea-pig triceps, closing with sutures the pocket containing the soil. By testing twenty samples of soil and floor dust they identified several which regularly produced gas gangrene, and confirmed Friedrich's observation that excision of the inoculated area within the first six hours would save 80% of the animals, whereas with each single hour after this the possibility diminishes, reaching only a 3% chance of survival after the ninth hour. Their method of test was therefore to administer the drug and to excise the infected muscle at some time after the ninth hour, a proceeding which without other treatment would almost invariably be followed by death. The merit of this form of experiment is that it imitates as closely as possible the natural conditions in which gas gangrene occurs. Various sulphonamide compounds from prontosil onwards prolonged life under these conditions, and some animals died of tetanus at a later stage. This drawback to the use of a crude natural inoculum was thus countered by previous immunization with tetanus toxoid, for the authors had reason to believe that tetanus antitoxin has also some prophylactic effect against gas gangrene. In their later experiments a large number of newer sulphon-

[3] *Trans. Ass. Amer. Phys.*, 1936, **51**, 341.
[4] *New Engl. J. Med.*, 1939, **220**, 15.
[5] *British Medical Journal*, 1941, **1**, 166, 282.
[6] *Klin. Wschr.*, 1941, **20**, 504, 529, 705.

amide compounds were tested, with some of which we are unfamiliar in this country: three of the most successful were cibazol (sulphathiazole), ultraseptyl (sulphamethylthiazole), and "V.K.57," a thiodiazole compound. These were found to prevent gas gangrene even if the inoculated area were not excised at all, in experiments both with soil and with cultures of *Cl. welchii*. Large doses had to be given, and given at the time of inoculation; a delay of four hours was fatal, with this exception—that if at this stage the drug in powder form was introduced into the muscle as well as given systemically it succeeded. These findings as a whole merely confirm results already obtained in this country, and what is now needed, little as we wish for it on any other ground, is an opportunity to test their applicability in man.

TRANSMISSIBILITY OF SYPHILIS

The primary lesions of syphilis are seen comparatively rarely in the female; or, to put it another way, clinically obvious primary chancres are far commoner in men than in women. The various explanations that have been put forward are discussed at some length by Pariser.[1] The sore may be concealed owing to the fact that it is situated within the vagina, on the cervix uteri, or in the urethra. It has been suggested that the vaginal secretions and menstrual blood of a syphilitic woman may contain virulent spirochaetes. Most observers agree that primary lesions of the vagina and urethra are rare, though some put those of the vagina as high as 12.5% and those of the urethra as high as 3.26% of all chancres in women. Most of the evidence points to the figures being considerably lower than these. In the case of the cervix the figures vary from 5 to 44%; it has generally been considered in the past that the truth stands much nearer the former than the latter figure.

Pariser investigated thirty untreated (one treated three and a half years previously) syphilitic women by injecting into mice 2 c.cm. of washings of the vagina and cervix, subsequently injecting into rabbit testicles extracts of the lymph nodes and spleens of the mice. He also studied by dark-ground examination a further thirty cases (twenty syphilitic and ten non-syphilitic) with no lesions of the cervix and with secretions varying from mucoid to purulent. In the former series seven positive results were obtained: of these, five of the patients had erosions and one an enlarged and oedematous cervix, with probable hidden lesions; in the seventh, the menstrual blood (of a secondary syphilitic) was proved to be infectious. In six cases organisms more or less closely resembling *T. pallidum* were demonstrated, and in only one positive case was the dark-ground examination negative. In the remaining twenty-three cases of the first series and in all thirty cases of the second series no organisms were found which resembled *T. pallidum*, though numerous other spirochaetes were noted in 50%. The author concludes, therefore, that in the presence of local lesions virulent *T. pallida* may be discharged into the vagina of a syphilitic woman even when the disease is of more than four years' duration—that is, chronologically late. Menstrual blood may be infectious in early syphilis, and an abnormal-looking cervix may also be infectious, probably as a result of lesions hidden in the cervix or in the uterus itself. On the other hand, the physiological secretions of the vagina of a syphilitic woman—other than the menstrual blood—are not infectious, and for infection to take place a lesion must be present. It appears, therefore, that a syphilitic woman is not likely to pass on her infection by sexual intercourse unless local lesions are present—except possibly when she is menstruating: it is well known that spirochaetes are present in relatively large numbers in the blood of secondary syphilitics, so that this observation is not surprising. In all cases in which a man has acquired syphilis from a woman careful examination of the cervix uteri will therefore reveal some abnormality in the large majority of cases, though in many this may easily be missed. It is interesting to note that cervical lesions may relapse, and that this may occur as late as six and a half years after the onset of the disease.

[1] *Amer. J. Syph.*, 1941, **25**, 339.

DISTRIBUTION OF BROMINE NARCOTICS IN TISSUES

It is sometimes forgotten that sodium bromide is not the only form in which bromine is used in medicine for its narcotic effect. The substance tribromethol (which we used to call avertin) is a bromine compound of similar composition to chloral, and there is also a substance, not much used in this country, which is precisely analogous to chloral—namely, bromal. Of the two classes of narcotics—the ureides and the barbiturates—bromural and pernocton are respectively members which contain bromine. Bromine also is present in brovalol, which is bornyl bromoisovalerate. In a laborious research Emerson[1] has recently studied the distribution of bromine in the organs of cats after administering each of these substances by intramuscular injection. He made these experiments in order to see whether the bromine was always to be found distributed in the same way, no matter what substance was used. His results are surprising, because they indicate nothing of the kind. It would at least be expected that avertin and bromal, substances closely similar in properties, would be similarly taken up. After avertin is given much bromine appears in liver and bile, and there is more in the nervous system, the heart, the lungs, and the marrow than in the blood. On the other hand, after the administration of bromal, bromine is taken up poorly by all tissues and more is present in the blood. While there is no resemblance in the distribution of bromine in the tissues after avertin and bromal, the distribution after pernocton is very like that after avertin. The only finding of Emerson's, indeed, which is in any respect in agreement with expectation is that after bromural the distribution of bromine is fairly uniform in all the tissues; from the resemblance of bromural to urea this finding is reasonable. Brain has less attraction than any other organ for sodium bromide. In this work, as in endeavours to relate chemical structure to pharmacological action, we are evidently still far from the key to the puzzle.

[1] *Anesth. and Analges.*, 1941, **20**, 181, 252.

"MEDICAL DIRECTORY," 1942

The ninety-eighth edition of the *Medical Directory* has been published in customary form by Messrs. J. and A. Churchill, Ltd. The typographical improvements introduced in 1940 are continued. The price has been increased by 50% to 63s., reflecting the great advance in the cost of paper and in almost every other item of the expenses of book production. There has been a net increase of 1,090 entries, and the number of pages of text has been increased by thirty-eight. The numerical summary of the medical profession shows that there are now 65,394 names, compared with 64,304 in 1941. Increases will be found in most of the sections of the *Directory*: 699 under Provinces, 141 under Abroad, 338 under Scotland, 171 under Ireland, and 101 under Wales. Two decreases are recorded: 289 under London and 71 under Services. The figures given above do not include 962 temporarily registered practitioners whose names, addresses, and qualifications are listed in a short section near the end of the volume. Notwithstanding all the difficulties of wartime this indispensable reference book maintains its standard.

HOSPITALS AND THE EMPIRE

A scheme for promoting post-war Dominion support for British voluntary institutions, and particularly hospitals which have become teaching and research centres for the Empire, was outlined at a luncheon in London in furtherance of the British Empire Benevolent Society, now in process of formation. The society was described as an association of all British peoples desirous of giving new or additional practical support to the great tradition of voluntary service. The scheme, which is of Dominion origin, was well advanced before the outbreak of the war, and a number of voluntary institutions had expressed their full approval. The creation of a central fund, with headquarters in London, will enable British people over-seas to assist the voluntary institutions.

Sir FRANCIS FREMANTLE, M.P., who presided, said that as an old Guy's student he knew to what extent that and other British hospitals were a training ground for medical men and nurses of the whole Empire. In the Dominions the hospitals were very large State or municipal undertakings; in this country the teaching hospitals were voluntary, though in recent years municipal hospitals had been associated with certain teaching work. But there would always be need for private benevolence on behalf of individual enterprise and the freedom that resulted from it. He did not like to be associated too closely with what might be looked upon as an appeal to the Dominions, but anything that came as an offer of help from the Dominions would give us an opportunity to say in what way we could use, with the greatest possible gratitude, any funds that might be afforded. A previous meeting attended by representatives of hospitals and benevolent institutions had shown that they were waiting for somebody else to take the lead, and the lead had been taken by Mr. Potter, the promoter of this scheme.

Mr. C. R. POTTER explained that it was not proposed to launch any appeal while the war was still on, when all money available was needed for war charities, but it was felt that some preliminary work should be done so that when the war was over they would be ready and would not have to wait until the Dominions were flooded with a multiplicity of appeals. A central organization was needed in London, but as the appeal was, in the main, an Overseas appeal on behalf of Empire services, the actual work of the appeal should be done by Dominion and Colonial men and women. When the war was over there would be many young men returning to the Dominions after service with the Forces who would have had opportunity of seeing how teaching and research institutions in Britain functioned, and they would be able to reinforce the appeal in their own countries. Such institutions belonged to the Empire and not merely to this country.

The address of the Society is No. 1, Albemarle Street, W.1.

A memorandum issued jointly by the Department of Health for Scotland and the Scottish Education Department urges local authorities to improvise nursery accommodation now for the children of war workers. Although a large-scale extension of wartime nurseries is planned, these will not entirely suffice, and it is therefore suggested that parents should make private arrangements for their children with friends or neighbours. Where they are unable to do this local authorities should get the help of the churches and suitable voluntary organizations in introducing mothers to suitable "foster parents." Grants will be paid to "approved" foster mothers at the rate of 4s. a child for a week of four days or more and 2s. a child for lesser periods per week. The meals-in-school is to be extended to children who are temporarily boarded out. It is also suggested that local authorities should consider utilizing vacant houses reserved for "bombed-out" families, rest centres, and first-aid posts where they can reasonably be adapted. Girls and women who are ready to work in nurseries are asked to join the Child Care Reserves; they will receive free training and billeting where necessary in addition to 10s. a week. After training and as nursery assistants they will earn £120 a year. Wartime nurseries in private houses, in play centres, and in schools are also part of the Department's plan.

Reports of Societies

PLANNED WARTIME NUTRITION

THE PLACE OF PROTEIN IN THE DIET

In his second lecture at the Royal Institution last month Prof. J. C. DRUMMOND spoke at length on the question of protein requirements in wartime dietary. The literature on the subject, he said, gave little assistance in determining the question how much protein ought to be provided per head of population. The data on which estimates might have been founded contained nothing more informative than calculations of what people normally ate. With regard to two classes—namely, growing children and expectant and nursing mothers—the position was established: even here there was little information as to exact physiological requirements, but the policy adopted was that whenever there was any doubt these two categories must have the benefit of it.

It was with the ordinary adult worker that the difficulty arose. The adult required a very small amount of protein to replace wear and tear, but one would not like to feel that the adult population in wartime was bound down to such minimums. A gramme of protein a day corresponded roughly to an ounce of meat a week, which meant an importation of 75,000 tons of meat a year. The protein intake in normal times, as shown by Orr's dietary surveys, extended from 63 to 100 grammes a day according to income level: In the higher-income groups about 40 grammes represented plant and 60 grammes animal protein, and the latter proportion became smaller as incomes diminished. These values were double or more the amount required to replace wear and tear, but there was no information at all how much protein above the minimum required to replace wear and tear the adult should receive.

The psychological importance of protein probably outweighed its purely physiological importance. It was greatly overrated, particularly in respect to the amount needed by the manual worker and the athlete. In many parts of the world the coolie carried out hard physical labour on a diet containing no animal protein or very small quantities of it. But so deeply was the fallacy as to the need for meat rooted in the community that it was better to give way to it, as the German Government had done, by allowing extra meat for those engaged in hard manual work.

Dairy Products and Food Fallacies

Milk and cheese must be regarded as important in other respects than solely as protein. They supplied calcium and some vitamins. With the occupation of Holland and Denmark supplies of milk products and eggs were cut off almost overnight, and it had been no easy matter to fill the gap. One could not suddenly turn to the United States or New Zealand, with their delicately balanced dairying economy, and ask for 50,000 tons of cheese or immense consignments of condensed milk.

Incidentally, the Ministry of Food was continually pressed to make use of the soya bean, a rich source of protein and a nutritious food. It was now not to be imported, save from the United States. It could be grown in this country, but the difficulty was that it was no good growing soya bean unless the yield of nutrients per acre was substantially higher than could be obtained with some more natural crop. The yields of soya bean in this country were never very high in comparison with the haricot bean or the garden dried pea. Moreover, unusual weather conditions were required to maintain the soya crop.

Another food fallacy was that natural products such as milk were badly harmed in respect of their nutritive value if heated or processed. By and large, the nutritional value of such products as milk was not badly or significantly altered. It was true that vitamins B_1 and C showed rather substantial losses on pasteurization, sterilization, drying, and condensing, but in practice these were the least important of all the nutrients present in milk, and there were other foods which could easily be used to supplement any falling off in these constituents. In

the major constituents of milk—protein, calcium, vitamins A and D, and riboflavin—there was no appreciative loss of nutritive value brought about by any of the commercial processes in use to-day.

The value of the egg was apt to be over-appreciated. It was excellent from a psychological point of view, but as a food it did not stand up too well in comparison with other foods. The constituents of one egg contrasted with half a pint of milk and one ounce of cheese showed that, with the exception of vitamin D, the egg was rather inferior.

A survey of middle-class families, contrasting their diet in 1935 and in 1941, showed that the total protein in the daily diet in those years was respectively 67.3 and 64 grammes, but animal protein had dropped from 46 to 33.8 grammes. This did not have the slightest effect on health, but it was getting down to the level at which there might be some concern as to the care of the child. There was now, however, reason to believe that the intake of animal protein was getting back to pre-war level, the decrease in meat consumption being made up by cheese. Milk consumption before the war was low in the low-income groups, and rose with income. The object of the milk schemes was to flatten that ascending curve.

National Bread

Finally Prof. Drummond turned to bread, which, he said, was regarded as a store of energy food; actually it was a good and cheap protein food, though without the nutritional value of meat, milk, and eggs. For the expenditure of one shilling 215 grammes of protein could be obtained in the form of bread, as compared with about half that amount in the form of potatoes, and very much less in the form of meat. In middle-class families, among women, in the survey made in 1935, the weekly consumption of bread was 35.2 oz., and in 1941 45.6 oz. Consumption of bread rose as consumption of sugar fell.

The Ministry of Food was continually asked why it did not insist on bread from the whole wheat. This was not altogether a simple question. If the whole wheat berry were ground up, and thereby 100% flour obtained, all the nutrients of the wheat, of course, would go into the bread, but also the outer coats of bran, which were very hard, and, no matter how finely milled, might injure digestions which were not equipped to open up these particles of hard material and digest out from them any nutrients they might contain. If some of this coarser material were removed one had a series of flours representing 90, 80, and 70% of the berry, so that a point could be reached of maximum digestibility and maximum nutritional value. It was very largely on digestibility trials of this type that it was decided to go for an 85% flour. It was then asked why should not 85% bread be made compulsory for the whole population. If the shipping position necessitated it, that would be done. The Ministry of Food had carried out a propaganda campaign for 85% flour, and this had increased the popularity of bread of that type, but had by no means converted the country. The major obstacle was public indifference and conservatism. The policy of fortification of the white loaf by addition of vitamins could, of course, be carried out. In America the Government had authorized bakers who wished to do so to add to white flour not only vitamin B_1 but riboflavin, calcium, iron, and nicotinic acid in quantities to bring flour up approximately to wheatmeal while retaining its whiteness. But there was always the feeling with a fortification policy of this type, in the present position in which so much still remained unknown, that not all the elements or all in right proportion might be added, and it was much better, if possible, to allow them to be distributed naturally in various foods.

The Royal Academy, in collaboration with twenty-six other art societies, has organized for January-March, 1942, a second United Artists' Exhibition on the same lines as the first, which was held in 1940. It consists of paintings, drawings, engravings, lithographs, and sculpture, all of which will be for sale. The surplus of the gate-money, after payment of expenses, will be given by the Royal Academy to the Duke of Gloucester's Red Cross and St. John Fund; and the artists have agreed to resign one-half of the proceeds of sales of works, to be divided equally between the Red Cross and St. John Fund and the Artists' General Benevolent Institution.

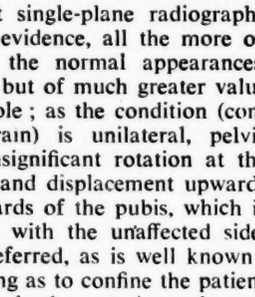
Correspondence

Sacro-iliac Strain and Traumatic "Subluxation"

SIR,—Dr. James Cyriax (December 13, p. 847) does real service in emphasizing the frequence of sacro-iliac lesions as causes of low back pain, and with his general conclusions with regard to diagnosis and treatment there can be little dissent. Greater insistence, however, is to be made on the separation of these lesions into two categories: those of strain typically found after parturition or arising insidiously in the obese; and those of traumatic subluxation, arising and dating obviously from some single violence, typically from a jerk when stooping and weight-lifting. Certain points with reference to the latter are of considerable importance and are little known.

The displacement occurs when the pelvis is held flexed on the thigh by muscular action and the spine, with the sacrum, is suddenly extended; it is of slight extent and consists essentially of a rotation, the upper part of the auricular surface of the ilium being carried forward and, sometimes, the lower part backward on the corresponding part of the sacrum and becoming locked in this position. Direct single-plane radiography of the joint rarely gives conclusive evidence, all the more on account of the great variation in the normal appearances. Stereoscopy sometimes is suggestive, but of much greater value is observation of the pelvis as a whole; as the condition (contrasting here importantly with strain) is unilateral, pelvic asymmetry can be observed—the insignificant rotation at the sacro-iliac joint produces a rotation and displacement upwards of the iliac crest, sometimes downwards of the pubis, which is very evident on careful comparison with the unaffected side. The symptoms are both local and referred, as is well known: they may be agonizing and so crippling as to confine the patient to bed. Comparatively little known is the anterior pain and tenderness in the iliac fossa, which, on the right side, has often led to an obvious misdiagnosis. This pain is often the predominant symptom, and many cases come to the general surgeon with the label of appendicitis.

Neglected, such traumatic cases lead to chronic strain and overstretching of ligaments, and become as resistant to treatment as are long-standing instances of primary strain. Diagnosed promptly, they offer scope for one of the most brilliantly and dramatically effective feats of manipulative surgery. There are numerous methods described, for the most part consisting in a routine putting of the joint through its whole range of movement; blind application of such methods, particularly any over-extension of the joint, may in fact do harm. Attention may therefore be drawn to an extremely simple manœuvre based on the view above expressed as to the nature of the condition. It is necessary merely to rotate the ilium forcibly, its upper end backwards, on the sacrum. For a left-sided lesion the patient lies on the right side, preferably (as for most manipulative work) on a low couch. The operator, standing at the back of the patient, places his left knee firmly against the back of the sacrum and with both hands flexes the patient's left thigh strongly on the trunk, and, further, backwards to its side. An unmistakable crunch results from successful reduction. Relief is immediate and most dramatic, but local tenderness, as would be anticipated, may persist for days. The familiar conclusion to sacro-iliac manipulations—shaking the pelvis up and down by an arm passed under it with the patient lying loosely prone, acting probably as a sort of "fine adjustment" of the articular surfaces—is an addition to be recommended.



Tracing from a case of right-sided "rotation." The axis of the spine, sacrum, and symphysis must be accurately midline for the purposes of comparison. Horizontal lines through the lateral processes of the lumbar vertebra and through one pubic spine render the asymmetry evident.

In after-treatment the trick often discovered by the patient as a method of relief (as described by Dr. Cyriax) of lying supine and drawing the thighs by both arms strongly on the

trunk is to be advocated as a valuable exercise and a precaution against minor redisplacements. The patient must be advised against weight-lifting in the stooping position.—I am, etc.,

London, W.1. C. JENNINGS MARSHALL.

Mechanism of Pain

SIR,—May I join in the discussion which is sure to follow your publication of Dr. L. Michaelis's thoughtful letter on sciatic pain (December 6, p. 825). Dr. Michaelis seeks (as I should myself) to extend the terms of reference so as to include all pain in his consideration of the subject; but I would go further and include all forms of grief—physical, mental, and moral (or spiritual)—for reasons which, I hope, will be made clear in what follows.

When trying to find causes of pain and to explain the mechanism of the production of pain, I have for very many years been in the habit of postulating the existence in our human make-up of a somatic sense of wholeness or integrity—a one-ness; and given the existence of this sense it is easy (whether rightly or not is not now contended) to find in the breach of such a one-ness the causation or mechanism of pain. The solution of continuity in a fractured bone, in an ulcer, or in an incision—any wound, in brief—represents such a breach. More than this, it may be argued that the disturbance of the relationship between the elements of any structure—nervous, muscular, and so on—as is seen in the instances of active or passive hyperaemia, induced howsoever they may be, possibly by pressure or blows or inflammatory reactions—all these may mechanically cause "pain." A "cold in the head," dropsy of the antrum, erythema solare—a hundred instances may be cited of such causes of pain. The application of intense heat or cold is always followed by a greatly increased influx of blood to the site of application and is felt as "pain" when this reaction sets in. Now it is this congestion which destroys, or tends to destroy, the cohesion (contiguity) of the cellular elements, awaking that sense of one-ness which fears the loss of integrity.

In the mental field the same sense is outraged (grieved) by any insulting experience—for example, "the proud man's contumely." So in the moral domain the conviction of having done wrong is followed, nay accompanied, by pain, which is surely an acknowledgment of the loss of moral integrity. Briefly, disintegration causes pain, as does any process tending to disintegrate a structure, be this physical, mental, or moral (spiritual). Illustrations of physical pain need not be enumerated. The break-up of a mental structure may be exampled by Dickens's study of Tom Pinch's devotion to Pecksniff and his desolating realization of his infatuation; while Macbeth's cry, "O, full of scorpions is my mind," gives us a good picture of a morally disintegrated personality—disintegrated because the warnings of that sense of integrity had not been heeded.

This somatic sense of integrity may be coextensive with consciousness itself or it may be a separate function, and, like the other senses, its development may vary with individuals. It may be more or less on the alert; and, accordingly, its reaction to the approach of some cause of pain may be instant or more or less delayed. That the causes of pain may be present long before the pain is felt is a matter of everyday observation. The suddenness of the onset of lumbar, sciatic, brachial, and other pains is evidence enough of this, as witness the success of the therapeutic test, for the pains quickly pass after the taking of salicylates, bromides, rhubarb, and calomel. That the cause here is "rheumatic"—the predisposing condition of the body fluids—is clear enough; the exciting causes are manifold.

Biopsy and examination of nerve or muscle sections under the microscope must fail to be of value, for the removal of such structures from the body not only kills them but must necessarily alter the distribution of their blood supply. I remember an occasion some thirty-seven years ago when that fine surgeon, the late Leonard Bidwell, was explaining why he was about to inject, at several points, carbolic acid into a very angry-looking patch of cellulitis, and how, having made some four or five punctures, looking up, his eye encountered mine, in which he must quickly have read the criticism, for, said he, "Of course the congestion is greatly relieved by this blood-letting, which will also lessen the pain." I still think the surgeon need not have run the risk of putting a powerful tissue destructor into that inflamed patch; blood-letting by simple incision allowed the tissue elements to resume more or less their normal relationships, the congestion subsided, and the pain was relieved. At least, so is my imagining.

The experiments of Kellgren quoted by you (November 15, p. 698) are illustrative of my remarks: congestion causes pain, depletion relieves it. But we have known of these things for a very long time, have we not? The relief of neuralgic pains—for example, supra-orbital—by the application of ethyl chloride and of a painfully swollen leg by elevation are examples of the same process.

Since pain may be banished, at least into subconsciousness, by suggestion, it must be allowed that pathological changes of structure (other than mental or spiritual) are not in question when we are dealing with physical pain. Many people "cry out before they are hurt," and this, it would be fair to argue, is evidence of a protective reflex action which is aroused by the threat of attack by some possibly disintegrating force. It is this protective reflex action which I think of as a somatic sense of wholeness, the rousing into consciousness of which is called by us pain.—I am, etc.,

Acton, W.3, A. R. EATES.

Night-blindness: A Psychological Study

SIR,—Dr. F. M. R. Walshe's criticism (December 13, p. 858) of the work of Dr. Wittkower and his colleagues on night-blindness calls for a survey of the general situation.

This disorder was almost unknown in our Army in the last war. Among several thousand soldiers and pensioners whom I boarded or treated I can recall no cases except one or two due to retinitis pigmentosa, though fear of the dark, sometimes of disabling intensity, was common. Our wartime literature was almost silent about night-blindness, but its importance in the Continental armies was shown by the publication of over forty articles about it in French, Belgian, and German periodicals.

Last year (*Journal*, 1940, **1**, 190) you published a letter in which I noted these facts, and suggested that we had escaped this disorder because we didn't happen to think of it. I gave warning, however, that if we talked enough about vitamins and night-blindness we might start an epidemic; "then," said I, "psychopathologists will declare the nature of the disorder and will be derided at first, but finally, when the epidemic is well established and the cases thoroughly ripened, will be called upon to cure it." Except for the last item this forecast is now fulfilled. The investigators had no difficulty in collecting some fifty cases; they showed that the men were mostly unfit for military service on psychological grounds, apart from the night-blindness, which was an excrescence upon the underlying pathological mental state; and their descriptions satisfy anyone familiar with the subject that in the last war the condition of the men would have been called "shell-shock" or "neurasthenia."

Dr. Walshe derides these findings and thinks the workers were "led up the garden" by "that incorrigible wag the British soldier." In turn I beg him not to be distracted by those sweetly pretty vitamins when his incorrigibles go sick by the score and say they can't see at night-time.—I am, etc.,

London, W.1. MILLAIS CULPIN.

Plea for Sternal Puncture

SIR,—May I use the two articles on macrocytic anaemia published in recent issues of the *Journal* to plead for a full marrow description in any unusual blood case. Without it they are of little value in the present endeavour led by Rhoads and Bomford to clear up refractory anaemias. Only with a full marrow description does the case assume permanent value.

In the first case described by Drs. N. S. Gordon and J. Japa (November 29, p. 769) the patient had a gastro-enterostomy for his duodenal ulcer eleven years ago. He "now shows a hyperchromic macrocytic anaemia which coexists with a hyperacidity of the gastric juice. . . . Sternal puncture showed the bone marrow to be normal. Liver was given with good result." Perhaps this is a case of achrestic anaemia. In the second case examination of the marrow revealed "an excessive number of large erythroblasts." Were these the disguised megaloblasts of Israels, because liver therapy then would bring about improvement. In the best British article on blood for several years

(*Lancet*, August 23, 1941) Israels states: "Megaloblastic marrow is an indication—the only certain indication—for liver treatment." If this indication were followed in atypical anaemias there would be no shortage of liver. I believe also that the patient's health would not deteriorate.

In Dr. W. Trevor Cooke's case (December 6, p. 806) a macrocytic anaemia with 33% reticulocytes showed that the blood was rapidly regenerating after an acute haemolysis which caused the jaundice. The associated polymorph leucopenia, with an absolute granular count of only 475, suggests a toxic action on white cells as well as on the red cells. Even the suspicion of agranulocytosis would warrant a sternal puncture here. The tests carried out for haemolysis are very complex compared with a sternal puncture. And the marrow picture of normoblastic hyperplasia common to haemolytic anaemias is so different from the unique megaloblasts of pernicious anaemia that the diagnosis could have been absolutely settled.

"In the meantime the patient was improving on a normal hospital diet without any medication." Her red cells and haemoglobin were already rising in the graph. And they continued in the same gradient in spite of the early liver injections. The sudden rise from the plateau just after the reticulocyte crisis usual in pernicious anaemia was not detected. The test dose of liver was "submaximal"—anahaemin 2 c.cm. This minute dose is awarded the praise for the 10% reticulocytes on the sixth day. Yet on this test dose hangs the diagnosis. To confirm it, why not stop the liver and watch the results on the peripheral blood? Or, better, do a sternal puncture. Then something really "unusual" would have been discovered.—I am, etc.,

Salford, Lancs. R. F. L. LOGAN.

Iodine Ointment for Epidermophytosis

SIR,—With regard to Dr. B. G. Shapiro's memorandum (December 20, p. 877) on the treatment of epidermophytosis of the feet with ung. iodi denigrescens, I would emphasize, as I have done elsewhere, that whatever fungicide may be employed preliminary exfoliation of the infected horny layer is advisable. For this purpose I prescribe a strong salicylic lotion—namely, acid. salicyl. ʒj, spt. vini meth. ind. ad ʒj. This is applied with cotton-wool swabs thoroughly between and around the toes and over other infected areas morning and evening, and the pulv. acid. salicyl. comp. *B.P.C.* is dusted between the toes and over the feet after each application. At the end of a fortnight's treatment exfoliation is usually well established and the lotion is omitted. I then as a rule employ Whitfield's ointment at night-time, and equal parts of liq. iodi mitis *B.P.* and spt. meth. ind., and the above powder in the morning. I shall, however, try Dr. Shapiro's suggestion after the preliminary treatment of exfoliation.—I am, etc.,

London, W.1. H. W. BARBER.

Dermatitis from Nail Lacquer

SIR,—Your annotation on the danger of nail varnish (December 13, p. 855) will have done good if it conveys a warning to the profession of the possible dangers latent in the organic solvents that are gaining such rapid commercial importance. The writers of the original article report only one skin test with tricresylphosphate, a widely used plasticizer (non-volatile solvent) for nitrocellulose and some resins. This gave a negative result, but it is perhaps worth recalling that Berkoff (1938) believed this substance to be the probable cause of a sensitization dermatitis related to the wearing for ten days of spectacle frames of synthetic resin plasticized with tricresylphosphate. Hutner (1941) states that tricresylphosphate is a violent poison if ingested.—I am, etc.,

Pathology Department, The University, Glasgow. A. C. LENDRUM.

REFERENCES
Berkoff, H. S. (1938). *Arch. Derm. Syph.*, Chicago, **38**, 746.
Hutner, S. H. (1940). *Stain Tech.*, **16**, 177.

A Quick Treatment of Scabies

SIR,—There is no question that there are many very efficient treatments of scabies. We have, however, not sporadic cases only to deal with, but an epidemic spread over the entire country. In many towns whole families, whole houses and quarters, and even whole streets are infested. Under these circumstances it seems to me that the time of three to four days, which we usually need to cope with a single case, is too long. In most instances the families affected include father, mother, and children, but owing to war conditions and the adult members being on shift work it is impossible to treat them as a family at one session. Danger from reinfestation therefore occurs owing to the adult members being either untreated or partly treated. Unless we are able to reduce the time required for treatment to a few hours we cannot exclude the possibility and probability of this reinfestation. It is a Sisyphean job. If, however, we reduce the time needed for a cure then we can treat all the members of one family together, thus diminishing the danger of contamination and recontamination. Furthermore, certain patients need a quicker treatment because they are called up suddenly, or have to rejoin units, or are evacuated at short notice.

I found a treatment of the late Prof. Oppenheim of Vienna, slightly modified by me, very useful and efficient. It enables us to cure scabies in two and a half hours. I treated in this way, at the minor ailment clinic of the public health department of the county borough of Barrow-in-Furness, 260 cases, eighteen of which had to be treated twice and six three times in the same manner. So far this procedure has been very successful. It is as follows:

(1) All members of the same family infected with scabies start treatment at the same time if possible. (2) Potash soft soap is rubbed for a quarter of an hour over the whole of the body, except the face and scalp, each member helping the other. (3) Then follows a hot bath of five minutes, the soap is washed off, the skin being rubbed with a brush. (4) The whole body is rubbed with Whitfield's ointment (potash carbonate 10 parts, precipitated sulphur 25 parts, petroleum jelly 125 parts) as described above and allowed to remain on the body for two hours without covering. (5) Then follows a warm bath with soap. (6) The body is dried and covered with ichthyol 1% in pasta zinc. oxid. comp. *B.P.* as soothing ointment. (7) After the treatment body clothing and bed clothing are changed, the blankets, and the *wrong* side of coats, dresses, and trousers, are pressed with a hot iron.

Impetigo and furunculosis complicating scabies are by no means contraindications to this treatment; they appear to subside quicker than usual. Cases of sulphur dermatitis were negligible. The treatment is cheap.—I am, etc.,

Barrow-in-Furness. LADISLAV LICHTENSTEIN.

Pyrethrum for Pests

SIR,—As Mr. Kenneth Mellanby (see *Journal*, February 8, 1941, p. 199) has drawn attention to the potential danger of the louse, may I in this connexion state that we have found very satisfactory response in the treatment of lousiness and scabies by the use of pyrethrum. An announcement in this matter has already been made in the *Indian Medical Gazette* (June, 1941: "Treatment of Scabies and Pediculosis," by D. N. Roy, S. M. Gosh, and Sir R. N. Chopra).

In case you can give it some publicity in the *Journal* with a view to testing the truth of our statement, I would like to lay stress on the fact that all preparations of pyrethrum are unstable, and therefore freshly prepared materials should be used. When used in scabies, the parts on which the ointment has been applied should not be covered with a bandage.

Since the publication of our paper we have given further trials of pyrethrum ointment in scabies with successful results.—I am, etc.,

Calcutta. D. N. ROY.

Death from Mercurial Diuretics

SIR,—I was interested in your annotation on this subject (December 13, p. 855), but I venture to disagree with the conclusions reached by Dr. Tyson, whom you have quoted. Ten years ago (*Lancet*, 1932, **2**, 139) I reported a case of heart failure in which kidney disease was definitely excluded as a possibility, and in which the first injection of salyrgan gave rise to precisely similar symptoms to those described by Dr. Tyson in her cases. The patient was a woman of 22 with congestive heart failure secondary to aortic and mitral disease; the dose of salyrgan used was 0.5 c.cm., which was given slowly intravenously. She complained of headache before the injection had been finished, and fifteen minutes later lost consciousness and went into a violent epileptiform seizure, which was

repeated five times in twenty-four hours. She did not die; but the same year I saw one fatality in a case of nephrosis, the patient being a young boy of 12 who had had a number of previous injections of salyrgan intravenously. The dose on this occasion was 2 c.cm., which to-day would be considered rather large for intravenous use, but at that time it was quite usual to employ this dose. On this occasion he did not get the full dose. Before the injection was concluded he clapped his free hand to his forehead, cried: "Oh, my head!" and was dead within a minute.

The primary lesson to be learned from these cases, as also from the cases reported by Dr. Tyson, is not the danger of giving mercurial diuretics in cases of nephrosis but the unwisdom of giving them intravenously. Since 1931 I have always given these preparations intramuscularly. In kidney cases I start with a dose of 0.5 c.cm., repeat with 1 c.cm. in three days, and proceed no further unless there is a good diuretic response. I have neither seen nor heard of any untoward symptoms following the use of these preparations given in this way, and I should be glad to hear if any of your readers have.—I am, etc.,

Truro. C. T. ANDREWS.

Gastric and Duodenal Ulcers in L.C.C. Hospitals

SIR,—In relation to the important article on the geographical distribution of gastric and duodenal ulcers in the British Isles, by Major B. M. Nicol (November 29, p. 780), the numbers of persons treated as in-patients for duodenal and gastric ulcer in the acute general hospitals of the London County Council may be of interest. The following table shows the figures for the years 1933 to 1938 inclusive:

Year	Duodenal Ulcer D	Gastric Ulcer G	Ratio D : G
1933	667	1,190	0.56 : 1
1934	685	1,367	0.50 : 1
1935	853	1,584	0.54 : 1
1936	945	1,707	0.55 : 1
1937	1,089	1,951	0.56 : 1
1938	1,299	2,106	0.62 : 1
Total....	5,538	9,905	0.56 : 1

The lowness of the ratio of duodenal to gastric ulcers (D:G ratio) is very noticeable. If it be true, as it seems to be, that poor diet and other causes of trauma to the gastric mucosa produce a relative preponderance of gastric as compared with duodenal ulcers the lowness of the D:G ratio in the Council's hospitals can be related to the fact that the poorest people are admitted there. In the individual hospitals the ratio varies from 0.93 to a minimum of 0.22, but while the last figure comes from a hospital which serves a very poor area it is not possible to say in general that the variations from hospital to hospital correspond to variations in economic conditions in the neighbourhood. The slight tendency for the D:G ratio to rise may be due to: (*a*) increasing hospitalization bringing in a larger number of duodenal ulcers (total numbers show a substantial rise); (*b*) improved diet and economic circumstances diminishing the number of gastric ulcers; (*c*) the increasing tendency on the part of the less poor among the inhabitants of London to seek admission to the Council's hospitals.—I am, etc.,

Public Health Department, London County Council. W. ALLEN DALEY.

A General Practitioner Service

SIR,—Now that the interesting and protracted correspondence on the related subjects of voluntary *versus* municipal or State hospitals and a State service instead of the present system of private practice has waned, if it has not ceased, the opportunity presents itself of calling attention to the crying need for developing a satisfactory general practitioner service; for whatever may result from the discussion of the first two subjects the general practitioners must remain as the essential part of any medical service.

The general practitioner has been referred to as "the backbone of the profession"—a term I dislike as suggesting the absence of a brain. Let me here again reiterate what I have written before. The general practitioner is not merely an inferior professionally of the consultant; his work overlaps and extends over wider fields than does that of the consultant, and in these wider fields he is often the superior. I like to refer to general practitioners as the foundation of the present and indeed of any medical service.

Now to-day on leaving hospital the general practitioner finds himself without that equipment which the consultant rightly regards as essential for the proper diagnosis and treatment of patients, and which is provided for him in hospital where the majority of his patients are treated. To avail himself of such equipment the patient must go to hospital and be examined by one or other consultant. This last condition is unavoidable if the hospital is not to be snowed under with excessive applications for the use of its equipment, but the arrangement is far from satisfactory for the experienced competent general practitioner, who has already thoroughly examined the patient and knows what ancillary aids to diagnosis and treatment are needed.

Lord Dawson long ago proposed primary centres fitted with the necessary equipment for diagnosis and treatment for the use of general practitioners. He has since done little to further this salutary innovation in general practice, but I am convinced that institutions of this sort are essential for the development of a satisfactory general practitioner service. If there are difficulties they must be faced and overcome. In the long run great expense would be saved. The most important part of the medical edifice is its foundation; only on a sound foundation can a noble superstructure be built; therefore, first develop a satisfactory general practitioner service.—I am, etc.,

London, W.8. HAROLD H. SANGUINETTI.

Certification

SIR,—Considering that a warning notice upon certification was issued by the General Medical Council in April of this year, and that this has had to be implemented by the leading article in the *Journal* of December 13 (p. 853), it seems that the warning notice has not had the effect that was desired. One wonders, therefore, if the leading article likewise will have any appreciable effect. One reason why it will probably be of only limited value is that not all practitioners subscribe to the *Journal*, and of those who do subscribe only a proportion, how large or how small I cannot say, read it.

Looking at the position more carefully, however, it does not appear to be fully realized that certificates from medical practitioners are required not primarily by patients, but by those in authority over the patients—for example, education committees, employers. Were these authoritative bodies directly to ask for the certificates from practitioners, as is done by liability and insurance companies, instead of indirectly and arbitrarily "demanding" them through our patients, it may be that carelessness and inaccuracy in the wording of these certificates, to which your leader writer directs first attention, would become much less.

There are some 25,000 general practitioners in this country, each of whom is obliged by force of circumstances to issue dozens or hundreds of medical certificates a week. Most of these he is obliged, again by force of circumstances, to issue without charge, or, in some districts, he charges a nominal fee of sixpence or a shilling, not because he thinks his certificate worth only this amount, but because of factors quite out of his control which influence his work. Such peddling for pittances is no part of real medical practice, especially in these times when, in some industrial districts particularly, the number of general practitioners compared with the general population is one to four thousand or more.

As long ago as 1913, with the inception of the National Health Insurance Act, it was fully recognized that medical practitioners were often in a quandary in issuing certificates, and to assist practitioners a Regional Medical Officer system was instituted, to our great advantage. Now, considering the difficulties under which we are at present straining, and considering the hundreds of thousands of certificates which are issued each week, the wonder is not that some of these certificates are inaccurate and carelessly worded but that their number is not even greater.

If, in any direction, a general practitioner service is found to be short of what is expected of it, then it seems reasonable to suppose that these shortcomings, when not caused by the vagaries of human fallibility, must be due either to the training which had fitted general practitioners for service or to those circumstances quite outside their control which so much modify

their work, or to a combination of these two factors; and I would be bold enough to say that these modifying influences upon a practitioner's work, being almost peculiar to his own branch of practical medicine, must be experienced to be adequately measured.

I have already given one reason why the warning notice issued in April appears to have had little effect, and why the leading article in your recent issue will likewise probably have such a result. The main reason for this supposition is, however, in my humble opinion, that adverse criticism, so easily made, is valueless unless accompanied by proposals for constructive improvement, and these have been sadly lacking. Without such constructive proposals, any number of warning notices and editorial articles will only touch the fringe of the problem. Finally, in considering that 75% of your readers are general practitioners, one may, I think, be pardoned for having expected from your leader writer, if not any constructive proposals for improvement, at least some form of apologia for the harassed practitioner.—I am, etc.,

Barnsley. S. CURRY, M.D.

*** We repeat: "Those who have to carry this additional and vexatious burden deserve our sympathy."—ED., *B.M.J.*

National Wheatmeal Flour?

SIR,—Dr. S. W. Swindells's timely letter (December 6, p. 822) makes it clear that the Ministry of Food is content to leave the nutritive value of the nation's staple food—bread—to the discretion of the millers. This seems to be unfair to both miller and public. Some millers put back all the germ into the flour, others sell it separately; yet the latter can still turn out the so-called national wheatmeal flour. The separated germ either goes to feed stock or is sold to milling firms who incorporate it into their particular brands of loaf, or it comes on the market as "bemax," etc. This is indeed a pathetic and humiliating outcome of all the months of endeavour by the Ministry of Food to produce a protective loaf. Your correspondent asks when the Minister altered his standard from that approved by the Ministry of Health. Still more important to the public is surely the question: Why were the millers not told clearly exactly what to do?

There are two other points that call for serious consideration. First, the presence of germ affects the storing qualities of the flour, especially in hot weather. Secondly, the infection known as "rope," little known to the public but a nightmare to the baker, can, I understand, be controlled by the use of vinegar. Has the necessary provision been made for an adequate supply of this compound when the bakers want it?—I am, etc.,

Cross-in-Hand, Sussex. H. L. DUKE, M.D., Sc.D.

Discharged Soldiers and Civilian Practitioners

SIR,—It is no doubt the experience of other practitioners that when men, discharged from the Army on medical grounds, present themselves for treatment the only history available is from the patient himself—namely, that he has had "chest trouble," or "heart trouble," or "gastric." Where special investigations have been carried out in a military hospital one would imagine on general grounds that, as is the custom with civilian hospitals, steps would be taken by the military authorities to ensure that the findings should reach the civilian practitioner in the shortest possible time. But no: investigations may have to be carried out all over again, thus involving unnecessary expense and delay before treatment can be started. Here it appears to me that the simple measure of handing to a man on his discharge a report addressed to his doctor would materially help the rehabilitation of the soldier to civilian life.—I am, etc.,

Farnham Common. W. GORDON ROBSON.

The National Baby Welfare Council has issued two new publications recently—"A Dozen Reasons why Mothers should Breast-feed their Babies," and "The Care of Milk in the Home." The Council will also have ready shortly a leaflet on "Droplet Infection and the Baby." These three leaflets can be obtained from 29, Gordon Square, W.C.1, price 2s. per 100. A specimen copy will be sent on receipt of a penny stamp.

Obituary

R. D. RUDOLF, C.B.E., M.D., F.R.C.P.

Emeritus Professor of Therapeutics, University of Toronto

Dr. Robert Dawson Rudolf, who died in Toronto on November 2, 1941, was one of the leading physicians of Canada, and had many friends in this country, as well as in the United States. He had been a member of the British Medical Association for forty-three years and was honorary secretary of the Section of Medicine when the Association held its Annual Meeting at Toronto in 1906. Throughout a large part of the last war he was consulting physician to Canadian Forces in England with the rank of Colonel C.A.M.C.

The son of William Norman Rudolf, he was born at Pictou, Nova Scotia, in 1865; he was educated at Birkenhead School and the University of Edinburgh, qualifying as M.B., C.M.Ed. in 1889 and proceeding to the M.D. in 1896 after postgraduate study in Paris and Berlin. He took the M.R.C.P.Lond. in 1899, was elected F.R.C.P. in 1910, and in 1932 was one of the first to become a Fellow of the Royal College of Physicians of Canada. After leaving Edinburgh, where he had been senior President of the Royal Medical Society, Dr. Rudolf spent five years in India, and then returned to Canada, where he made his home in Toronto and reached the highest positions in the medical world of that city. He was for many years physician to the Toronto General Hospital and the Sick Children's Hospital, and professor of therapeutics in the University of Toronto. He was an emeritus member of the Association of American Physicians, a Fellow and Past President of the American Therapeutic Society, and the Canadian Government appointed him expert adviser under the Proprietary and Patent Medicine Act. His book *Medical Treatment*, first published in 1921, reached a fourth edition in 1934. This well-written book conveyed for the benefit of students and young practitioners the conclusions drawn from a large experience at the bedside. It was a happy blend of traditional teaching with the most recent knowledge, striking a personal rather than an encyclopaedic note. Its popularity was well deserved, for it was the outcome of sound common sense and a long apprenticeship to clinical medicine.

Dr. Rudolf married Rosa Marguerite, daughter of J. T. Danson of Grasmere, and had one son and one daughter. His son, Major R. G. Rudolf, C.A.M.C., is now at the Canadian Military Headquarters in London.

Universities and Colleges

UNIVERSITY OF OXFORD

In a Congregation on December 13 the degree of D.M. was conferred on H. de B. Kempthorne and E. C. O. Jewesbury.

UNIVERSITY OF CAMBRIDGE

The following candidates have been approved at the examinations indicated:

FINAL M.B.—*Part I (Surgery, Midwifery, and Gynaecology)*: B. G. C. Ackner, V. R. Arulanandom, W. E. S. Bain, G. P. Baker, G. A. Barclay, J. A. V. Bates, W. J. M. Beveridge, J. A. Black, P. F. Borrie, B. F. Brearley, M. M. Brown, C. D. Calnan, N. A. Campbell, P. W. S. Coghill, N. D. Compston, J. W. A. Crabtree, E. G. A. Crawshaw, N. F. Crofts, M. C. Cross, R. J. R. Cureton, R. E. Danckwerts, H. G. Danziger, G. H. Dhenin, R. Dobson, K. M. Duncan, P. D. Eeman, R. M. Emrys-Roberts, G. E. Ffrench, T. N. Fison, J. B. Foote, D. G. R. Fox, A. C. Franks, F. S. Glassow, N. J. Goorney, J. A. B. Gray, G. F. Green, D. W. H. Griffiths, E. J. Harrison, E. J. Holborow, R. A. Holden, P. Hugh-Jones, A. Hulme, W. P. U. Jackson, M. R. Jeffrey, P. G. Jeffries, H. W. F. Jones, H. D. Juler, T. D. Kellock, D. E. R. Kelsey, J. M. S. Knott, H. M. Lawson, A. G. Leacock, K. T. Lockhart, H. E. Lockhart-Mummery, A. Lyell, H. McColl, I. Macdonald, C. W. F. McKean, S. J. R. Macoun, H. G. McQuade, R. G. Mathers, L. H. H. May, R. H. Meara, R. G. Miller, C. R. Naish, J. F. Neil, D. A. H. O'Sullivan, R. A. Palmer, C. M. Phillips, J. S. Pippard, E. C. Poulton, J. R. K. Preedy, P. M. M. Pritchard, P. K. Renshaw, W. S. Rhodes, A. G. Richards, W. E. Roden, A. J. Rook, J. H. B. M. Rowlands, J. G. Salter, J. M. W. Sedgwick, M. P. Sherwood, D. S.

Short, E. G. Sita, J. F. P. Skrimshire, R. D. Slack, J. B. Stanton, M. G. P. Stoker, J. C. Swanson, R. D. Sweet, G. E. Thomas, E. G. Turner, J. K. Wagstaff, R. J. Walker, J. C. Waterlow, R. B. Welbourn, B. C. Welshman, J. C. N. Westwood, G. Wetherley-Mein, R. H. Wheeler, R. U. Witney, D. I. Williams, R. I. Williams, J. F. R. Withycombe, R. B. Wright, J. B. Wyon. *Women*: A. Bolton, S. M. E. Cornes, G. E. L. Cummins, P. Eskell, M. L. Macalister, P. B. Shaw, E. Tylden. *Part II* (*Principles and Practice of Physic, Pathology, and Pharmacology*): J. D. Atwell, A. P. Bentall, H. Butler, D. Caddy, W. H. Chase, J. W. A. Crabtree, R. A. D. Crawford, E. D. Cullen, J. P. Donnell, H. L. Ellis, E. J. S. Evans, T. N. Fison, G. C. Franklin, D. S. G. Genge, N. Gillman, E. V. Hope, A. E. Howarth, F. M. Lancaster, J. J. Landon, S. E. Large, A. G. Leishman, D. McAnally, C. W. F. McKean, H. L. McMullen, S. L. Melville, J. N. Milnes, P. H. Nash, J. H. C. Phillips, R. J. F. H. Pinsent, G. F. Purves, A. H. Rea, W. S. Rhodes, R. D. S. Rhys-Lewis, P. Sainsbury, F. E. T. Scott, W. H. Scott-Easton, J. A. Smith, G. O. Storey, J. H. Tasker, W. H. Tattersall, D. G. Vulliamy M. M. Walker, D. G. Wraith. *Women:* A. Davies, D. H. King, E. Rhodes.

UNIVERSITY OF LEEDS

The following candidates have been approved at the examinations indicated:

M.D. (STATE MEDICINE).—R. G Smithson.

FINAL M.B., CH.B.—*Part I* (*Old Regulations*): Dorothy J. Armitage, T. E. Bairstow, J. W. Bishop, E. K. Blackburn, Mary Braithwaite, J. G. Brockis, J. S. Cason, L. Crawford, C. B. Dawson, Joan A. Dawson, L. S. P. Divers, F. F. Edmonds, Mary Eglinton, H. Gray, Joan Hall, Elspeth Harrison, E. B. Harrison, Kathleen M. Harrison, G. Hipps, J. D. M. Holt, Mary Johnson, J. A. Judson, H. M. Kershaw, H. S. Klein, T. G. Kletz, C. E. Lacey, R. E. Lawrence, G. K. Laxton, Margaret N. Lea, M. A. Lecutier, H. Lee, R. Levy, C. L. Lewis, D. H. Lewis, G. L. Middleton, L. L. Miller, D. T. Milnthorpe, E. K. Morris, E. Neil, J. B. Raper, H. Riley, Betty Sanderson, S. Smith, P. M. Smith-Moorhouse, R. M. Stamp, H. Stead, W. S. Suffern, J. W. Taylor, A. Wertheimer, G. M. Williamson, Pauline Wynne.

UNIVERSITY OF LIVERPOOL

The following candidates have been approved at the examinations indicated:

M.D.—R. R. Hughes.

FINAL M.B., CH.B.—*Part I:* J. Ainsworth, A. M. Brenner, N. Broughton, P. S. Dearden, E. G. Donovan, P. M. Edis, K. B. N. Freeman, J. Gould, F. E. D. Griffiths, [1]Betty Hargreaves, B. T. Harrison, H. Holden, C. A. Hopkins, J G. P. Jones, J. D. King, J. W. Langley, Constance G. Lee, A. McPherson, W. E. S. Marshall, J. W. Maybury, J. K. Meiring, Janet B. Mercer, Sheila L. Richardson, J. J. Rivlin, J. M. G. Sarson, W. Sircus, [1]A. Stone, A. H. Swithinbank, Nora Taggart, C. Taylor, D. W. Townley Simone J van Son, J. G. Warbrick, Margaret A. Williams, R. D. B. Williams, F. B. Wright. *Passed in Individual Subjects:* D. A. Kininmonth and R. S. Williams (Pharmacology and General Therapeutics). *Part II:* Muriel C. Andrews, [2]D. Annis, A. Ansell, E. R. Banner, Beryl R. Bentley, Margaret J. Blackburn, R. A. Blyth, [3]H. O. M. Bryant, E. Burman, W. G. Canning, [2]Eva V. Cooper, K. H. Dalrymple, A. S. Davidson, H. Davidson, G. Davies, J. N. Dearnaley, J. F. Doherty, [3]K. E. Donnellan, Ann Donnelly, J. F. Ferguson, I. H. Foy, H. Francis, H. G. Frank, H. Friend, [3]S. M. Green, F. D. Griffiths, Elizabeth M. Harper, E. N. Hugh-Jones, A. Jolleys, Eirwen M. Jones, [3]S. E. Keidan, D. A. Kininmonth, H. Lewis, I. P. Madhok, Margaret L. Magee, A. W. Merrick, Jean C. Miller, A. F. Murphy, [3]R. C. Nairn, K. H. Oldfield, N. E. Raybould, J. S. Redfern, R. L. B. Roberts, M. J. R. Ryan, Betty Schofield, H. R. Shepherd, Nora Taggart, G. H. Thomas, K. B. Thomas, Doreen M. Watt, H. O. Williams, Margaret Woolfenden.

[1] Distinction in pharmacology and general therapeutics. [2] Distinction in forensic medicine and toxicology. [3] Distinction in public health.

UNIVERSITY OF ABERDEEN

At a graduation ceremony on December 17 the following medical degrees and diplomas were conferred:

M.D.—W. R. Topping.

M.B., CH.B.—D. G. Bisset, H. W. Booth, D. MacB. Brodie, J. K. A. Burn, S. Cameron, A. Currie, W. H. Escoffery, F. S. A. Forbes, T. B. Foubister, I. K. Hay, H. G. Laing, J. C. Leask, Morna C. Macdonald, W. G. Meldrum, D. A. Milne, Catherine G. R. Peebles, J. Scott, N. L. B. Singleton, W. L. Walker.

D.P.H.—C. D. Allan.

UNIVERSITY OF EDINBURGH

At a recent meeting of the University Court it was decided, on the recommendation of the Senatus and the Faculty of Medicine, that a professional examination in psychiatry, forming part of the final professional examination, should be held, beginning in March, for medical students in their fourth year, with a supplementary sitting at the beginning of the autumn term of the fifth year.

Profs. T. J. Mackie and J. C. Brash were reappointed to represent the University on the board of managers of the Royal Infirmary for 1942. Prof. Brash was also appointed to succeed Sir Norman Walker as representative of the University on the Scottish Universities Entrance Board.

The annual report of the adviser to Indian students recorded that one diploma in public health and one diploma in medical radiology had been awarded to Indian students; the M.R.C.P.Ed. had been conferred on three men; the F.R.C.S.Ed. on six men and one woman; and the Scottish triple qualification on one man.

UNIVERSITY OF WALES

WELSH NATIONAL SCHOOL OF MEDICINE

The following candidates have satisfied the examiners at the examination indicated:

M.B., B.CH.—*Pharmacology:* S. Brest, Joan Collins, K. V. Crowther, T. K. Davies, A. D. Evans, Elizabeth M. E. Evans, H. J. Fisher, A. J. L. Haley, R. G. Hughes, Megan James, D. C. W. Jenkins, H. O. Jones, Tegwyn Jones, Alice M. A. Lee, A. V. Lilly-white, *B. H. McCracken, D. A. MacFarlane, Margaret E. Milter, E. J. Parr, J. Ll. J. Phillips, Isabella M. Pinkerton, J. F. Rees, Iorwerth Rees-Mathews, D. B. Richards, E. G. G. Roberts, Freda Thomas, Gertrude G. Thomas, L. P. Thomas, P. H. Thomas, *L. L. R. White, H. O. Williams, Mary Ll. Williams, W. H. Williams.

*With distinction.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH

At a meeting of the Royal College of Surgeons of Edinburgh held on December 16, with Mr. J. W. Struthers, President, in the chair, the Liston Victoria Jubilee Prize for the greatest benefit done to practical surgery in the preceding four years was awarded to Prof. J. R. Learmonth for his contributions to the surgery of the autonomic nervous system; and to Mr. Robert McWhirter for his contributions to the radiotherapy of malignant disease.

The following, having passed the requisite examinations, were admitted Fellows:

H. E. Blake, J. H. Brownlee, L. S. Corner, W. B. S. Crawford, J. S. Davidson, C. W. A. Falconer, R. D. Ferris, J. D. T. Jones, A. R. Leask, F. R. Miller, E. T. Owen, G. Rigby-Jones, M. V. Sheehan, G. M. Sleggs, G. C. Tweedie, P. J. M. Wright.

The Services

R.N.V.R. OFFICERS' DECORATION

The King has approved the award of the Royal Naval Volunteer Reserve Officers' Decoration to Surgeon Commander David Cook Wilson, R.N.V.R.

CASUALTIES IN THE MEDICAL SERVICES

ROYAL NAVY

Missing

Surgeon Commander Douglas Arnold Newbery, R.N.

ROYAL ARMY MEDICAL CORPS

Captain CLIFFORD STUART HUMPHRIES, who was the only child of Mr. and Mrs. Stanley Humphries of Alsager, Cheshire, has died of wounds. He qualified M.R.C.S., L.R.C.P. in 1935 and took the Cambridge degrees of M.B., B.Chir. two years later. He had held the post of house-physician at the Royal Berkshire Hospital. Entering the R.A.M.C. on the outbreak of war in 1939, he became captain a year later. He had been a member of the British Medical Association since qualification.

DEATHS IN THE SERVICES

Lieut.-Colonel JOHN CARMICHAEL, R.A.M.C. (ret.), died at Lahore on December 7, aged 87. He was born in Dublin on May 5, 1854, was educated in the school of the Royal College of Surgeons in Ireland, and took the L.R.C.S.I. in 1877, the L.R.C.P.Ed. in 1878, and the F.R.C.S.I. in 1889. Entering the Army as surgeon in 1881, he became lieutenant-colonel after twenty years' service and retired in 1909. He had recently been living at Srinagar in Kashmir. He leaves a widow.

Lieut.-Colonel WILLIAM MOORE BELL SPARKES, D.S.O., R.A.M.C. (ret.), died at Scarborough on December 5, aged 69. He was born on September 9, 1872, received his medical education at King's College Hospital, took the M.R.C.S., L.R.C.P. in 1899, and, after acting as house-surgeon at King's, entered the R.A.M.C. as lieutenant in 1900. He became major in 1912, lieutenant-colonel in 1918, and retired in 1925. In 1908-10 he was on special duty in Uganda. He served throughout the war of 1914-18, being A.D.M.S. in North Persia in 1918-19, was four times mentioned in dispatches, and received the D.S.O. and later a bar to the D.S.O. After the war he held for some years a post at the Royal Hospital at Kilmainham, Co. Dublin.

Medical Notes in Parliament

Industrial Rehabilitation Scheme

Mr. MESSER, on December 4, asked the Minister of Labour whether it would be possible to include in his industrial rehabilitation scheme workers who had suffered from any classes of industrial disease and ex-tuberculosis patients. Mr. BEVIN replied that the provisions of the interim scheme extended to persons who were prevented by industrial disease or tuberculosis from following their normal occupation, and who were suitable for training and employment in the occupations covered by the scheme.

X-ray Examination of Recruits

On December 11 Mr. BEVIN told Sir Francis Fremantle that last year the Medical Advisory Committee, under the chairmanship of Lord Horder, considered the adoption by medical boards of *x*-ray examination for tuberculosis for every recruit. The committee decided that this was impracticable, and on the question of preparing a complete supply of equipment Mr. Bevin was advised that this was still the case.

M.O.H. for Dudley

Captain ELLISTON asked on December 11 if the Minister of Health proposed to intervene on behalf of the medical officer of health for Dudley, who had been suspended for the duration of the war because he had registered as a conscientious objector, as permitted by the Military Service Act. Mr. BROWN said the appointment, dismissal, or suspension of the medical officer of health of a county borough did not require his approval. He had no authority to intervene between the council and their oificer in this matter.

Diphtheria Incidence: New York, Toronto, and London

Sir FRANCIS FREMANTLE inquired on December 11 for statistics of the results of immunization against diphtheria in New York, Chicago, and Toronto as compared with London. Mr. BROWN said his information was that in New York City, since large-scale immunization of children began in 1929, diphtheria had steadily decreased from an average of about 10,000 cases a year between 1920 and 1929 to just over 400 cases in 1940, in relation to a population of over seven millions. Information about Chicago was not readily available. In Toronto in the five years 1933 to 1937 there were no more than 209 cases of diphtheria in all. In two of these years, 1934 and 1937, there was not a single death, while in 1940 there was no case of either notification or death. In the county of London, with a population of about four millions, notifications of diphtheria in recent years averaged close on 8,000 cases a year.

Fortified Bread

Major LLOYD GEORGE, in an answer on December 11 to Sir E. Graham-Little, said approximately 25% of the white bread and flour consumed in the United Kingdom was now fortified with vitamin B_1. It was estimated that 7% of the bread consumed was in the form of the national wheatmeal loaf.

Feeding Scottish School Children

In the House of Commons on December 16 Mr. JOHNSTON moved the second reading of the Education (Scotland) Bill. He said he believed that the science of nutrition would do for public health what sanitation did for it in the last half-century. School feeding was desirable for many reasons. It was hoped to reach the highest possible nutritional standard at the lowest possible prices for the maximum number of children. He hoped also that before long they would be able to report that 20% of the children attending the schools had a hot midday meal. The aim of the Bill was to prevent malnutrition instead of trying to remedy it after unmistakable symptoms had appeared. The Government was very anxious that local authorities should be given power to feed all children, whether they were necessitous, under-nourished, or not. The question whether payments could be recovered from the parents was one for the local authority afterwards. Under the present law local authorities could feed a necessitous or under-nourished child until the age of 5. In some cases, however, there was a gap between the time the child reached 5 and the date it entered school. The Bill would bridge this gap and empower local and education authorities to continue without intermission feeding arrangements for the under-nourished child. Deaf and blind children, and defective children of any kind who were educated by special provision, whether in schools or at home, could come in for the benefit of these full arrangements.

Mr. WESTWOOD, replying to the debate which followed, said that the Bill applied to children attending any school, including nursery schools, whether under an education authority or private management. To help the local authorities the Secretary of State for Scotland was going to appoint a nutritional expert. They would also impress on the local authorities the need for more training in domestic science. They would train the girls, especially during the last two years of school life, to make good substantial meals.

The Bill was read a second time.

Industrial Health Research Board

On December 16 Sir JOHN ANDERSON informed Mr. Messer that the secretary of the Industrial Health Research Board was Sir David Munro, who was 63. He was at present giving part of his time to the Ministry of Supply as chief medical adviser, but in view of that a senior member of the Board's investigating staff was acting as joint secretary. There were 13 full-time investigators, none of whom was medically qualified. Sir John Anderson circulated their names.

Mr. MESSER asked if Sir John Anderson did not think that this important post ought to be a full-time job, especially in view of the fact that that was so during the last war. Sir JOHN replied that normally it was a full-time job, but Sir David Munro was giving much-needed help in the Ministry of Supply, and so far as his time was not available to the Industrial Health Research Board the gap was filled by the temporary appointment of a senior member of the staff.

Mr. MESSER: Is Sir John Anderson aware of the grave dismay with which the public has received the report of the British Medical Association that no fewer than 32,000,000 weeks are lost each year by industrial workers through preventable illness? Sir JOHN said that the business of the Industrial Health Research Board was not primarily concerned with industrial disease, but with such matters as industrial fatigue and the like.

Doctors Serving as Combatants

On December 16 Sir ERNEST GRAHAM-LITTLE asked the Minister of Labour how many registered medical practitioners were serving as combatants in any of the fighting Services; and whether, in view of the shortage of medical personnel for both civilian and military needs, he would allocate such practitioners to medical duties. Mr. ERNEST BROWN, who replied, said that arrangements had been made to secure that normally a registered medical practitioner might serve in H.M. Forces in a medical capacity only, and he had reason to believe that the number serving as combatants was negligible. The matter referred to in the last part of the question appeared to be for the Service Ministers, who agreed that it was only in exceptional circumstances that a medical practitioner might be employed in a non-medical capacity.

High-frequency Apparatus

Before Parliament adjourned for Christmas medical M.P.s set before Mr. W. S. Morrison the case for amending the present custody by the Post Office of high-frequency apparatus owned by medical practitioners. Dr. HOWITT suggested that the Post Office should pay the cost of insuring this apparatus against war risk and that the technical experts of that department should investigate the possibility of arranging for its professional use under safeguards. Mr. MORRISON promised that this point would be investigated.

Panel Doctors' Records.—The Minister of Health, when asked whether, to reduce unnecessary use of paper, he would abolish the keeping of records, etc., by insurance practitioners, replied that he was not satisfied that the suspension of the system of medical records would be justified in present circumstances.

No. 50

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended December 13.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for : (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for : (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases ; a blank space denotes disease not notifiable or no return available.

Disease	1941					1940 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	126	12	23	3	7	169	15	45	—	6
Deaths		2	1				3	3		
Diphtheria	1,203	57	343	55	39	1,392	46	455	40*	48
Deaths	29	2	5	2	3	53	2	12	1	2
Dysentery	105	4	45	—	—	78	2	35	—	—
Deaths			—	—	—			—	—	—
Encephalitis lethargica, acute	1	—	2		—	1	—	1		—
Deaths		—	—				—	2		
Enteric (typhoid and paratyphoid) fever						19	—	3	8	2
Deaths						—	—	—	—	—
Erysipelas		—	57	7	4		36	52	5	4
Deaths		—	—				—	—		
Infective enteritis or diarrhoea under 2 years										
Deaths	37	2	13	9	2	40	—	10	9	4
Measles	886	44	39	48	3	15,278	299	367†	—	8
Deaths	—	—	1	—	—	12	—	1	1	—
Ophthalmia neonatorum	76	5	19	1	—	76	4	17	—	—
Deaths										
Paratyphoid fever	17	—	6	—						
Deaths	2	—		—						
Pneumonia, influenzal‡	966	54	12	1	5	866	66	15	3	9
Deaths (from influenza)	21	2	2	—	1	33	8	3	—	1
Pneumonia, primary			232	10				196	20	
Deaths		29		8	14		37		16	10
Polio-encephalitis, acute	1	—				1	—			
Deaths		—					—			
Poliomyelitis, acute	18	2	—	6	—	10	—	5	—	—
Deaths		—	—				—	—		
Puerperal fever	1	1	10	1	—	2	2	12	1	1
Deaths		—					—			
Puerperal pyrexia	167	10	18		6	110	5	17		1
Deaths										
Relapsing fever	—	—				—	—			—
Deaths										
Scarlet fever	1,392	45	279	61	25	1,546	69	242	77	42
Deaths	2	—	—	—	—	—	—	1	—	—
Small-pox	—	—	—		—	—	—	—		—
Deaths		—	—	—	—		—	—	—	—
Typhoid fever§	16	2	3	6	2					
Deaths	—	—		1						
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough	1,715	209	60	27	3	2,505	30	205†	—	21
Deaths	11	1	4		—	10	—	3	4	—
Deaths (0–1 year)	397	38	66	25	27	311	18	68	45	17
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	4,462	580	621	194	156	5,682	957	724	217	156
Annual death rate (per 1,000 persons living)			13·5	12·9	¶			14·6	14·5	13·7
Live births	4,910	457	731	248	203	4,558	293	801	295	199
Annual rate per 1,000 persons living			14·9	16·5	¶			16·2	19·7	17·4
Stillbirths	205	23	30			187	12	40		
Rate per 1,000 total births (including stillborn)			39					48		

* One case of mixed infection—diphtheria and scarlet fever.
† Notification in certain administrative areas only.
‡ Includes primary form for England and Wales, London (administrative county), and Northern Ireland.
§ Includes paratyphoid A and B for Northern Ireland.
¶ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

EPIDEMIOLOGICAL NOTES

Discussion of Table

Substantial increases in the incidence of measles, diphtheria, and scarlet fever were recorded during the week in England and Wales. The notifications of these diseases were 219, 100, and 68 in excess of the totals for the preceding week. The notifications of dysentery declined by one-third, and the weekly total was the lowest recorded since the end of September. Large fluctuations in the weekly number of cases notified have been a feature of the returns for measles during the past two months. During the week under review the increase was due to outbreaks in several areas, the biggest rises being recorded in Cheshire, Wilmslow R.D. 43 ; Lancashire, Wigan C.B. 29 ; Shropshire, Bridgnorth M.B. 33. The notifications of diphtheria, 1,203, made the highest weekly total since the first weeks of January ; half of the total increase was due to Liverpool C.B., where the cases increased from 57 in the preceding week to 105. The only county to show a notable rise in the incidence of scarlet fever was Lancashire with 33 cases in excess of the total for the preceding week. Owing to outbreaks of whooping-cough in the rural areas the number of cases in Norfolk increased from 31 to 89.

In Scotland the increases in the totals for the preceding week were : diphtheria 30, measles 12, scarlet fever 41, and whooping-cough 8. The largest local increases in diphtheria and whooping-cough occurred in Glasgow, measles in Edinburgh, and scarlet fever in Dundee.

Quarterly Return of the Registrar-General for England and Wales

The return for the September quarter of 1941 on the whole gives a fairly favourable picture. The general death rate was 9.7 per 1,000, compared with 10.7 in the third quarter of 1940, and an average of 9.8 for the third quarters of the five years prior to 1940. The births represented a rate of 14.1 per 1,000, compared with 14.3 in the September quarter of 1940 ; the average rate for the five preceding third quarters was 15.3. Infant deaths were 6,411, a mortality of 43 per 1,000 live births. This rate was 2 below the average of the ten preceding third quarters. In the previous four quarters the rates were 43, 57, 75, and 59. The natural increase, excess of births over deaths, was 46,069. The corresponding increases in the third quarters of 1938, 1939, and 1940 were 55,537, 57,723, and 37,359 respectively.

Returns for the Week ending December 20

The number of notifications during the week in England and Wales included scarlet fever 1,220, whooping-cough 1,564, diphtheria 1,006, measles 710, pneumonia 903, cerebrospinal fever 110, poliomyelitis 11, dysentery 146, paratyphoid 19, and typhoid 22. Thirty-three deaths were due to influenza.

Medical News

Sir Charles Wilson, President of the Royal College of Physicians of London, is a member of the British delegation to Washington.

A meeting of the Pharmaceutical Society of Great Britain will be held at 17, Bloomsbury Square, W.C., on Thursday, January 8, at 2.30 p.m., when Prof. A. St. George Huggett will deliver a lecture on "The Embryo as a Patient."

Prof. Noah Morris will deliver a lecture on "Renal Efficiency" at the Weston Hotel, Bath, on Thursday, January 8, at 5.30 p.m. All Service medical officers and civilian practitioners will be welcome.

The College of Midwives, formerly known as the Midwives' Institute, has just celebrated the diamond jubilee of its foundation. The Queen, who is patron of the college, has sent a message wishing it continued success "in its good work of upholding the status of midwives, safeguarding their interests, and at the same time promoting the welfare of the mothers of our race." The Minister of Health has also congratulated the college on its long record of service.

The November issue of the *Bulletin of War Medicine* has recently been published, and makes No. 2 of the second volume. It is well up to the high standard set by the previous issues, and among much interesting material contains a special article by Colonel Leonard Colebrook on the disinfection of the skin. Readers are reminded that the Medical Research Council has recently issued an index to the first six numbers of the *Bulletin*, constituting Volume 1. The index can be obtained on application to H.M. Stationery Office, price 6d.

The Government has set up a committee to advise on the general plan of the official history of the war, with Mr. E. A. Benians, Master of St. John's College, Cambridge, as its chairman. To direct the conpilation of a medical history of the war an editorial board, under the chairmanship of the President of the Board of Education, has been constituted of representatives of the fighting Services, the Ministry of Health, the Department of Health for Scotland, the Medical Research Council, and the War Cabinet Secretariat. Sir Arthur MacNalty, lately Chief Medical Officer of the Ministry of Health, has been appointed editor-in-chief.

Mr. T. E. A. Stowell, F.R.C.S., and Dr. D. A. Coles have been re-elected to the Council of the Industrial Welfare Society.

We regret to announce the death on Christmas Eve of Eldred, widow of Sir Victor Horsley, F.R.S., F.R.C.S., first Chairman of the Representative Body of the British Medical Association. Lady Horsley was elected an honorary member of the Association in the Centenary year 1932.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

Authors desiring REPRINTS of their articles should communicate with the Secretary, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

ADVERTISEMENTS should be addressed to the Advertisement Manager (hours 9 a.m. to 5 p.m.). Orders for copies of the *Journal* and subscriptions should be addressed to the Secretary.

TELEPHONE NO.—B.M.A. and *B.M.J.*: EUSTON 2111.

TELEGRAPHIC ADDRESSES.—EDITOR, *Aitiology Westcent, London*; SECRETARY, *Medisecra Westcent, London*.

B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Alopecia Universalis

V. M. L. writes: I shall be obliged if any medical practitioner will help me in the treatment of a case of total loss of hair in every part of the body. Septic foci were eliminated; ultra-violet rays, glandular extracts, vitamins, etc., have been tried in vain. The patient is a male aged 34.

Sulphapyridine with Acids and with Alkalis

Dr. E. N. RUSSELL writes from Alexandria: With reference to the article by Major R. M. B. MacKenna on the treatment of gonorrhoea by sulphapyridine (June 28, 1941, p. 958), I notice that he gives very large doses of sulphapyridine (22 grammes in forty-eight hours) accompanied by very large doses of alkali (720 grains of potassium citrate). I have read that to assist the absorption of sulphapyridine it is advisable to give acids such as lemonade or citric acid. Is it not reasonable to suppose that Major MacKenna's patients tolerate the large dosage of sulphapyridine because its absorption is prevented to a large extent by the alkali which accompanies it, and that equally good results would be found with a much smaller dose of sulphapyridine given without alkali?

Income Tax

Schedule E: Commencing Years of New Appointment

A. G. inquires as to his position in this connexion.

*** The statutory rule is that the emoluments of the income-tax year in which the taxpayer first holds the office shall be based on the income of that year; the assessment for the second year is also to be based on the then current year's earnings; the assessment for the third year is to be made on the basis of the then preceding year, but the taxpayer can claim a reduction to the amount of the earnings for the current year. When the employment ceases the current year's earnings basis applies to the year of cessation. There is accordingly only a small chance of hardship arising from a temporary appointment being assessed under Schedule E. The risk is further reduced by the special wartime reduction to the current year's basis, which can be claimed when the aggregate earnings as assessed exceed by more than 20% the actual earnings of the year.

New Appointment

S. S. formerly lectured for different councils, but now holds a temporary whole-time appointment. What is the basis of assessment?

*** The emoluments from the appointment are undoubtedly chargeable to income tax under Schedule E. As to basis of assessment and risk of being overcharged in the second and later years see reply above to A. G.

LETTERS, NOTES, ETC.

War and Mental Trauma

Dr. RICHARD BELL, *M.C.*, writes from Haydon Bridge, Northumberland: In these days, when so many family men of approaching middle age are being called to the colours, it is wise and humane to contemplate how they adapt themselves to military life. I remember in our last great conflict that as a young pert subaltern I extended my pity to those elderly men who tried to loosen their joints by organized games, for, strange as it may seem to the younger generation, instead of a surfeit of rifle drill and gruelling bayonet fighting, we had in physical training simple games of great value which men could enjoy and did enjoy. Nowadays, lest the younger officers are too preoccupied to supervise parades and to temper the zeal or bullying instincts of a class of non-commissioned officer which always rises to the top in time of war, would it not be possible for R.A.M.C. officers to grace the parade ground in their occasional leisure moments and see how the men fare under training? It is probable that they would minimize psychological trauma, which ought to arise in no other way than through enemy action. War is hell, but it can be made a greater or a lesser hell

Crèches

Dr. W. MACCALL BOYD (Largs) writes: This war is a total war, and will not be won until our production is on a total war basis. In order to make the most of our resources women must enter industry. This raises the problem of the infant and young child whose mother is required to perform factory work. The establishment of a wide network of crèches to care for these children while the mothers are at work is now not only desirable but inevitable. In the case of factory towns these crèches should be located at the factory. In the case of towns where women travel considerable distances to work the crèche should be located in the town itself. The advantages of a crèche are tremendous and obvious. It releases vast sources of woman-power for war work. The child is given a good start—the teaching of cleanliness and morality can begin early. There is no doubt that much juvenile delinquency and even adult crime is traceable to bad upbringing in the first five years of childhood. The accusation is often levelled against the crèche system that it splits up family life. Let us face facts: the family *as an economic unit* is to-day rapidly disintegrating under the hammer-blows of economic forces. And who will say that this is an undesirable thing? If anyone thinks so, let him reflect on the conditions under which many children live in our industrial districts. The mother—slovenly in habits and thoughts, untidy, long ago having given up the unequal struggle against the vicious circle of poverty, disease, unemployment, and dirt, content to live only from day to day—can she give the child its birthright of good health, morality, and cleanliness? Anyone with even a passing experience of slums can testify to the wide prevalence of these conditions. In addition to aiding our war effort the establishment of the crèche will ensure that the young people, in whose hands the future of this country lies, will start their lives under the most favourable conditions for good citizenship.

Pruning the Prescription

Dr. W. ERIC LISHMAN writes from Peverell, Plymouth: While welcoming the *National War Formulary* I do not think the pruning has gone far enough. There are still too many mixtures, drops, sprays, and tablets, and the list of preparations to be used in place of proprietary drugs could be shortened. The profession should regard the *Formulary* as a golden opportunity to wean patients from the bottle and to undermine the power of the drug trade, which has imposed its system of magic on a credulous public. Powerful vested interests, however, will fight hard to maintain this system. Let us hope that the pruning knife will be used unflinchingly on the quack remedies.